Volume 4
Issue 9

RISC USER

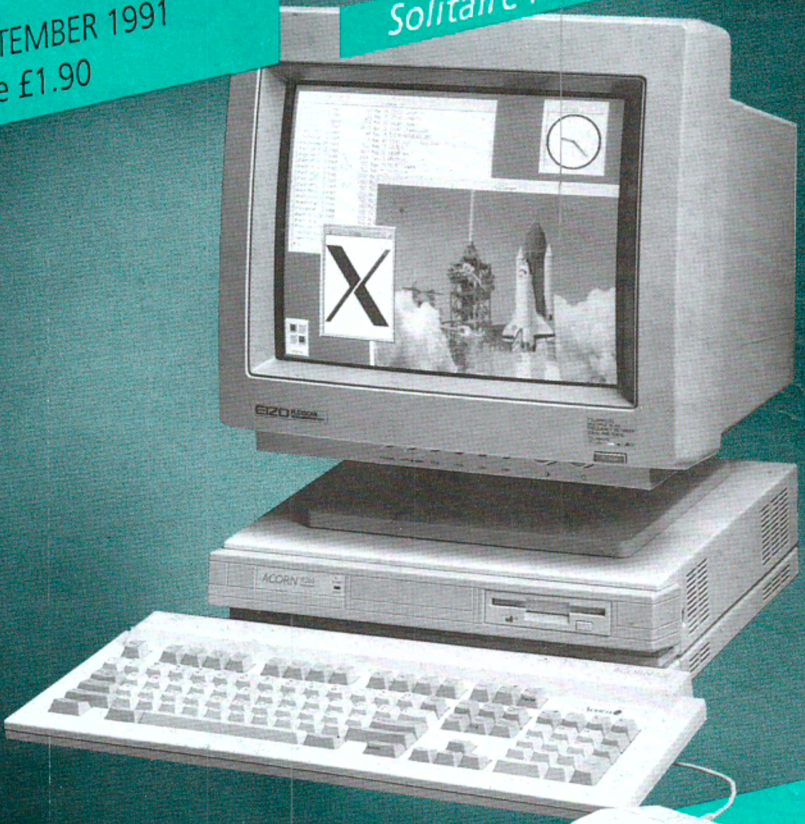
Form Designer

Desktop Folio Reviewed

Multi-Mode Sprite Viewer

Solitaire Picture Kit

SEPTEMBER 1991
Price £1.90



UNIX for the Archimedes

The magazine and
support group
exclusively for users
of the Archimedes

ISSUE

9

VOLUME 4
SEPTEMBER 1991

RISC USER

THE ARCHIMEDES MAGAZINE AND SUPPORT GROUP

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EDITORIAL

It is now some four years since the Archimedes was first launched, and the first issue of RISC User appeared. Much has happened during the course of that time. Acorn's original 305 and 310 machines have developed into today's A400 series (with more memory and hard disc drives), the top of the range A540, the Archimedes-based UNIX systems, and indeed, as we report in more detail in this issue, the advent of UNIX for the A400 series. And in all of this we should not forget the A3000 which has done so much to ensure the growing popularity of the Archimedes range as a whole.

Likewise, RISC User has grown significantly in the intervening years, from its original 32 pages through to a regular 72 plus pages today. The content has developed, particularly since Acorn released RISC OS, which has enabled the Archimedes to become the powerful but easy to use system it had always promised to be. And the accompanying magazine disc has attracted a substantial number of regular subscribers with its emphasis on quality backed up by first rate support.

Life, of course, never stands still; change is always imminent. And if rumours are to be believed then we should expect to hear some major announcements from Acorn this autumn in the development of the Archimedes range. Maybe the long expected Archimedes laptop will be launched, or a new Archimedes range to complement the existing A540. I think we can also expect to see some major new developments with regard to RISC OS itself, with even better applications than before.

And what of RISC User? We shall, of course, continue to to do what we believe we do best - to bring you authorative and detailed reviews and articles on which you can depend. Some readers claim we have a rather technical bias, and that may be true, but the Archimedes is a complex system, and it is only by taking the time and effort needed that one can appreciate and use it to the full. Nevertheless, we continue to strive to provide more help for newcomers to computing, which will enhance and extend the information provided by Acorn in the User Guide and other Archimedes manuals.

Last autumn we celebrated the completion of volume three of RISC User with the immensely successful **Volume 3 Special Disc**, and we have already laid plans for an even better **Volume 4 Special Disc** to be released at the start of volume 5. Once again this will represent tremendous value for money, and will be sold only to valid subscribers at the special price of £4.75 until the end of the year. We hope that this really will be something special, with all the best programs from volume 4, and much much more.

We shall also be preparing, as previously, a complete printed index to the whole of volume 4, and this will be mailed out with the November issue to all paid up subscribers.

We shall also be putting new plans for RISC User magazine into effect in the coming months to respond to the views of our readers, with more reviews, and more practical, down to earth information, plus the high quality of technical input for which the magazine is already well known.

In addition, we expect to add a number of completely new products to our growing range of quality software, all of which will be available at substantial discounts to readers, compared to the prices you will see advertised elsewhere. All in all, RISC User has more to offer than any other Archimedes magazine, and all for the price of your annual subscription.

M.W.

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PC EMULATOR GOES MULTI-TASKING

Acorn has released version 1.60 of its PC Emulator, which now runs from and returns to the RISC OS Desktop, leaving current RISC OS applications and data intact. With a minimum of 2 MBytes of memory, DOS applications can be run concurrently with RISC OS applications within the multi-tasking environment. DOS Files can be accessed directly from RISC OS allowing them to be copied, deleted and dragged as if they were RISC OS files. The PC Emulator also provides full CD ROM support via CDFS and MSCD extensions, allowing access to standard PC CD ROMs.

MS-DOS 3.3 is supplied with the Emulator, and a special mouse driver enables the standard RISC OS mouse to act as a Microsoft mouse. Emulation of the Intel 8087 maths co-processor increases the speed of floating point operations by a factor of 14.

The PC Emulator can run in CGA, EGA or MDA graphics modes with partial support for VGA for software which directly accesses the video hardware (Windows 3 can be run under the emulator).

The cost of version 1.60 is £99 plus VAT. Existing users who were supplied with MS-DOS (but NOT DR-DOS) can upgrade now at a specially discounted price of £29 plus VAT. A DR-DOS version will be available later. The upgrade can be obtained by sending the original PC Emulator disc and a cheque for £34.08 (made payable to 'Acorn Direct'), and your name and address to PC Emulator 1.60, Acorn direct, 13 Dennington Road, Wellingborough, Northants NN8 2RL (offer open until 31st October 1991). The full Emulator kit (not the upgrade) is available through BEEBUG Ltd. and other Acorn dealers.

SOFTWARE OF MANY COLOURS

Software house 4mation has provided information on two new products expected to be released this Autumn. *smArt* is a kind of cut and paste graphics system. Files are provided containing comprehensive kits of parts for such subjects as churches, cars, robots, people, etc., based on Draw files. Components from each kit can be seamlessly fitted together to build up a complete image to the user's design. Separate subject discs will be available in addition to the collections supplied with *smArt*.

Chameleon is an aid to editing Draw files by allowing the simple editing of any colour related to any object in a Draw file, a process which is difficult to handle from within Draw when dealing with complex objects. *Chameleon* can also convert any picture into 256 levels of grey, and provide colour separations for professional printing purposes. No prices have yet been announced for either product.

4mation now has a new address: 14 Castle Park Road, Barnstaple, Devon EX32 8PA, tel. (0271) 25353, fax (0271) 22974.

ALPINE ULTRASONIC

Latest offering in the field of sound and music synthesis is the *UltraSonic Sound System* announced by Alpine Software. This is a complete system which it is claimed will allow high quality music to be produced quickly and easily. Disc 1 contains !Ultra, the multi-tasking Desktop music editor, and !Samples which converts samples from sources such as Armadeus, MultiPod and SoundTracker. Disc 2 contains almost 150 sampled instrument sounds. The whole package including eight page manual costs £30.00 inclusive from Alpine Software, P.O.Box 25, Portadown, Craigavon BT63 5UT, tel. (0762) 342510.

MORE SOLUTIONS FROM OAK

Oak Solutions has announced details of a low cost sound sampler for the Arc at under £30. The *Arc Recorder* consists of a hand-held electret condenser microphone, which simply plugs into the printer port of any Archimedes or A3000 via a 3 metre length of cable. The software supplied with Arc Recorder allows samples to be recorded, with 8-bit quality sampling, played back and transferred to Genesis and other

C Development system for the Archimedes & A3000

The C development system is a **complete C language** at an incredible price. It is ideal for beginners, but may be used by experienced C programmers to develop large applications.

The package includes a **multi-tasking editor** from which programs may be compiled and executed without leaving the desktop. In fact you can compile, link and run C programs at the press of a key.

The **full-featured compiler** is quick, easy-to-use and generates fast ARM code which may be linked to other programs libraries using the **object code linker**. Compiler errors are automatically highlighted in the editor for easy correction.

A very comprehensive range of Acorn compatible **RISC OS functions** is included, allowing complete WIMP applications to be written. New libraries of functions may be created, or functions added to existing libraries using the **library facility** provided.

Features include:

- Conforms to ANSI specification
- Easy to learn and easy to use
- Full feature editor similar to Edit
- Built-in ARM assembler
- Fast object code linker
- Ability to link 'in memory'
- Built-in Make utility
- Can run from the command line
- Library maintenance facility
- Auto error flagging in editor
- Auto link after compilation
- Links to shared C library CLIB
- Compiler/linker in single module
- Flexible configuration options
- Wimp, sprite, font functions etc.
- Projects for multiple sources
- Output assembler listing
- Conditional compilation

The full package includes a 200-page user guide, editor, compiler, linker, 14 libraries of functions, and example programs. Requires 1MB RAM and single floppy drive only.

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The following PostScript compatible fonts are available as an upgrade to existing Ovation users:

Curator Medium
Curator Medium Oblique
Curator Bold
Curator Bold Oblique
Bookmark Light
Bookmark Light Italic
Bookmark Demi
Bookmark Demi Italic
Chaucer Medium Italic

Please return your original Ovation Work disc.

Price ***£8.81*** Inc. VAT
Stock code 0091
Please add £1.00 carriage.

Star/Epson Colour Printer Driver

This RISC OS printer driver was developed specifically for the range of Star colour printers. It gives superb results on both 9 and 24-pin printers, and is ideal for all applications that use RISC OS printer drivers. It is a Release 2 driver, supporting various print resolutions and 'fancy' text printing, and is suitable for the following range of printers:

- Star LC24-200 colour
- Star LC-200 colour
- Star XB24-10 colour
- Star LC-10 colour
- Epson JX compatible
- Epson LQ & SQ colour

Price **£17.63** Inc. VAT
Stock code 0090
Please add £1.00 carriage.

Approved by Star Micronics Ltd.

Archimedes & A3000 Software from BEEBUG 117 Hatfield Road, St. Albans, Herts. AL1 4JS applications via the standard Armadeus file format. A Genesis support module is also included for those wishing to integrate real-time sampling into their own Genesis applications. The Arc Recorder costs £29.95 plus VAT.

Oak Solutions has also released *ClassROM* aimed at educational network users. This is designed to overcome the slow response to the multiple loading of Archimedes applications over an Econet network. ClassROM plugs into each machine on the network, providing local copies of all applications, yet these can still be updated by the network manager. For station users, ClassROM-based applications are truly 'read only'. For more information contact Oak Solutions, Cross Park House, Rawdon, Leeds LS19 6HA, tel. (0532) 502615, fax (0532) 506868.

FAMILY HISTORY FROM TOMORROWS DESIGNS

Trees II is a database application dedicated to the needs of those researching their family trees. The application has been developed in Turbo Basic on a PC and runs on an Archimedes under the PC Emulator. The global tree display produced by Trees II shows a section 6 generations high by 23 boxes wide of a descendant tree, and this window can be moved around the tree which can be 24 generations high by 999 boxes wide. Tree II costs £49.95 inclusive from Tomorrows Designs Ltd., 37a Union Street, Ryde, Isle of Wight PO33 2LE, tel. (0983) 67890.

DIGITAL STORAGE OSCILLOSCOPE

New from Armadillo Systems Ltd. is the DSO-2CH podule, which allows an Arc to be used as a dual-trace high quality Digital Storage 'Scope with a bandwidth of 30MHz. The dual-width podule fits any Archimedes (but not the A3000), and is supplied with RISC OS multi-tasking software.

The DSO-2CH is capable of undersampling. Using advanced waveform techniques, multiple images are combined for a repeated waveform, producing a more accurate image than might otherwise be expected. The DSO-2CH costs £445.50 (plus VAT), while a single channel version, the DSO-1CH costing £323.10 (plus VAT) is also available. Armadillo Systems Ltd. is at 17 Glaston Road, Uppingham, Rutland LE15 9PX, tel. (0572) 822499, fax (0572) 821244.

FOR ART'S SAKE

Another art package for the Archimedes range has been released into an already crowded market-place. *PrimeArt* is a 256 colour art package with on-line help designed for Primary and Special Needs children. Costing £79.95 plus VAT (which includes a Primary site licence) *PrimeArt* is available from Minerva Software Ltd., Minerva House, Baring Crescent, Exeter EX1 1TL, tel. (0392) 437756, fax (0392) 421762.

ARXE SYSTEMS UPDATE

Arxe Systems Ltd. has announced a revised version of MultiFS, the multiple filer system for the Archimedes (reviewed in RISC User Volume 4 Issue 1). MultiFS costs £36.00 from Arxe Systems Ltd., 279b Romford Road, Forest Gate, London E7 9HJ, tel./fax 081-534 1198.

CHROMA PAL CODER/HAWK V9 UPGRADED

The Wild Vision Chroma 100 series PAL coder is invaluable for converting RGB output to high quality PAL-encoded composite video. This enables computer output to be displayed on normal TVs, multiple monitors and incorporated into video sequences. There are two models costing £129 and £185 (both plus VAT).

Wild Vision's Hawk V9 Colour Digitiser has also been brought right up to date with a new software issue. The hardware has also been upgraded and is claimed to produce even better output, while the Hawk V9 Driver Module has been improved. For more details contact Wild Vision Ltd., 15 Witney Way, Boldon Business Park, Boldon Colliery, Tyne & Wear NE35 9PE, tel. 091-519 1455, fax 091-519 1929.

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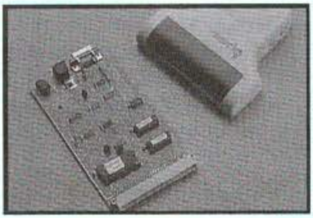
Producers of quality hardware add-ons for the Archimedes and A3000



Scavenger Image Scanners

A full range of high-quality monochrome scanners for the Archimedes and A3000. Both a hand-held and a full width A4 version are available, with a sheetfeeder option for the A4 unit. All the models are supplied with an interface card and software. A3000 models fit to external expansion port.

See retail catalogue for prices and stock codes

VIDC Mode Expander

The Beebug VME is a hardware and software package to enhance the range of available screen modes on a multi-sync monitor. The small hardware module increases the available clock speeds to the video controller VIDC, while the software provides new screen modes and an application to define more of your own.

0139 VIDC Mode Expander £29.95 Dealer fit only

SCSI Disc Drives and Interfaces

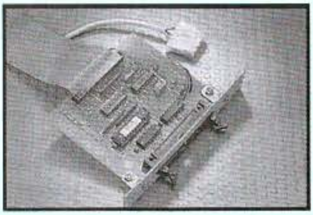
Beebug manufacture a full range of external SCSI hard disc drives for Archimedes and A3000. These are housed in an attractive case with a high-efficiency power supply. To complement these we produce an A3000 interface card, and also a SCSI upgrade option to the A3000 Disc Interface described below.

See retail catalogue for prices and stock codes

External Disc Drive Interfaces

It is often desirable to connect additional floppy disc drives to the Archimedes or A3000, especially when using the PC Emulator. Our range of interfaces allow for up to four external 5.25" or 3.5" drives to be connected. Special circuitry avoids the need to alter any setting on the external drives. The A3000 interface may be upgraded to include SCSI.

See retail catalogue for prices and stock codes



A3000 RAM Cards

Beebug offer a full range of RAM expansion cards for the A3000 to increase the available RAM to 2 or 4Mbyte. Our standard 1Mbyte and 4Mbyte cards measure just 166 by 31mm, and use the latest in memory chips. The upgradable 1Mbyte card can be expanded by the user at any time to provide a full 4Mbytes.

See retail catalogue for prices and stock codes

... Forthcoming Products ...

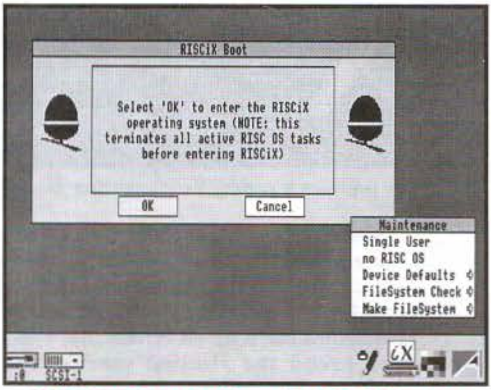
Beebug are currently working on a whole range of exciting new products for the Archimedes and A3000. Some of these scheduled for release shortly include a user fittable 4Mbyte RAM card for the 310, Spectra 100 & 300 colour scanners, ARM 3 processor card, a full range of IDE hard disc drives and interfaces, and a high-speed 16-bit SCSI interface. Please contact us for details of availability.

All prices are quoted exclusive of VAT. The standard postage charges given in the retail catalogue also apply.

UNIX for the Arc

After a call from MicroCare Lee Calcraft gets UNIX installed on his Archimedes.

As last month's news item announced, Acorn has made RISC iX 1.2 available for the Archimedes. Until now, if you wanted to run UNIX on an Acorn computer, you had to use an R140 or R200 series UNIX machine - even though from a hardware standpoint, these machines are essentially Archimedes variants. It is now possible, however, to upgrade 400/1 and 500 series Archimedes to UNIX.



Select 'OK' to enter the RISCiX operating system (NOTE: this terminates all active RISC OS tasks before entering RISCiX)

RISC iX can be started from the RISC OS Desktop

But the upgrade is a little more complex than ordering a couple of floppy discs and installing them in your machine. First of all, the package consists of over 50 Mbytes of software! And to make any use of it, you will need a 100 Mbyte hard disc and *at least* 4 Mbytes of RAM. Because of this, RISC iX is installed on site by an engineer from Granada Microcare, and the cost of the upgrade covers one year's telephone support.

The price for installation starts at £999 plus VAT, and although this sounds a great deal, a considerable portion of this goes in licence fees to AT&T, MIT, Sun, OSF, and XIX Ltd. who hold the copyright on the software. If you require Microcare to perform a RAM upgrade as part of the package, or to supply a suitable hard drive, then the price increases accordingly.

Once you have ordered RISC iX, you will receive a call from a Microcare engineer who will discuss the upgrade options with you, establishing whether your machine needs any further hardware enhancement prior to installation. There are a couple of points worth pondering here on the question of hard drives. First of all, RISC iX will only work with the standard ST506 hard disc interface (as supplied with the 400 series) or with an *Acorn* SCSI interface. When RISC iX starts up, RISC OS is closed down completely, and there can be no access to filing system cards other than these two. This means that if you have an Oak Solutions SCSI card for example, you simply cannot use it for RISC iX.

The other point concerns the current contents of the drive which you propose to use for UNIX. Installation requires that a drive be reformatted completely, so you will need to copy off any of your own files that are currently on the target disc.

For our review of this product we requested that Microcare should proceed exactly as with a normal upgrade. Just a couple of days after the initial telephone call from Microcare, two of their operatives arrived for the installation. A 200 Mbyte master drive was connected to the SCSI connector at the rear of my machine, and I was quizzed on how I wanted my drive partitioned. In other words, how much space did I want allocated to RISC OS and how much allocated to UNIX.

My drive is 116 Mbytes formatted, and I opted for around 30 Mbytes UNIX free space and around 25 Mbytes for RISC OS.

A further 50 Mbytes or so was required for the UNIX software itself, leaving some 10 Mbytes for UNIX swap space (allowing memory to be swapped in and out of RAM). These figures were punched into writeable icons on Microcare's installation application running on my machine. After clicking on "OK" the drives chugged away for something over half an hour before the formatting and transfer was complete. The master drive was disconnected, and the men from Microcare logged onto UNIX to check that all was well before leaving.

It is only after the installation is complete that you can begin to take stock of the full extent of the package. The software includes the following:

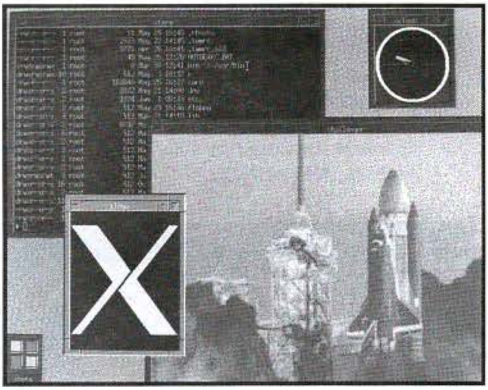
Berkeley UNIX Release 4.3
Sun's Network Filing System 4.3
MIT's X Window System, Version 11
IXI's X.desktop 2.0 user interface
RISC iX Toolkit
Pascal, Fortran and C compilers
OSF/Motif derived toolkit
Acorn RISC OS and Application Suite

This is supported by four large manuals:

The RISC iX User Guide
The RISC iX System Administrator's Guide
The X.desktop Guide
The X Window System Adminstrator's Guide

and by a bulky set of release notes. These detail the specific points in which RISC iX differs from exact conformance to UNIX 4.3, and includes a considerable number of unfixed bugs - including a problem with the serial port resulting in unreliable reception at speeds of 9600 baud during certain types of keyboard activity.

The manuals are written and produced to the usual high standard that we have come to expect of Acorn, and the RISC iX User Guide is ideally suited to those new to UNIX. I did however find some gaps in the documentation. The only documentation on using the Pascal, Fortran and C compilers appears in a scant few pages of the very useful UNIX on-line manual (though there is a little more, I am told, in the two volume RISC iX Programmer's Reference Manual). In another case, while the X.desktop Guide covers the X.desktop more than adequately, its brief description of how to invoke X.desktop was not sufficiently clear for me to get into it without using the Hotline support.



X.desktop provides a graphical user interface for UNIX

Since UNIX was installed on my machine I have needed to make a good number of calls to the Hotline - mostly because the installation procedure failed to set permissions correctly on certain files - and I have found the Hotline service to be excellent, responding immediately, and solving my problems quickly and efficiently.

USING THE SYSTEM

With RISC iX installed, the Archimedes still powers up in the RISC OS Desktop, but with a RISC iX icon on the icon bar. Clicking on this warns you that starting up UNIX will kill off all current RISC OS applications. When you confirm this, booting begins, taking about a minute to complete. You must then log on, and the corresponding UNIX prompt appears. From here UNIX commands may be be entered as required. My machine has the benefit of an ARM 3, and I must say that RISC iX seemed to be highly responsive to the commands issued. This is not surprising, since when we gave benchmarks for the R140 against other UNIX workstations (see RISC User Volume 2 Issue 5), it compared very well indeed - beating, for example, the VAX 11/780 costing £30,000, by a factor of two. These figures are based on an R140 fitted (as standard) with an ARM 2. The figures for the R260, and for the RISC iX upgrade running on an ARM 3 machine, should be faster by a factor of three.

X Windows and X.desktop form a part of the RISC iX upgrade, and provide a GUI (graphical user interface) for UNIX. But they make more stringent demands on your hardware. Firstly you cannot use them without a multi-scan monitor, and secondly they really need at least 8 Mbytes to run effectively. My tests were all carried out on a 4 Mbyte system, and prolonged disc access resulted whenever the mouse was moved. Redrawing the screen after moving or resizing a window took up to five or ten seconds each time, during which vast amounts of data were swapped between RAM and hard disc. Acorn assure me that this does not happen with an 8 Mbyte system. Nevertheless, the X System still makes a useful interface for UNIX even if you only (!) have 4 Mbytes. Things like the manual browser, and the text editor Xedit are most welcome - providing that you keep a firm grip on the mouse, and avoid all unnecessary changes to window position and size.

CONCLUSION

To summarise, RISC iX seems an excellent package, and it comes with a year's high quality hotline support. If you need UNIX for your 400 or 500 series machine, then you will find this an ideal upgrade route.

The RISC iX upgrade for 400 and 500 series Archimedes starts at £999 plus VAT (£2326 plus VAT with a SCSI card and 100 Mbyte unformatted SCSI drive - 120 Mbytes would be more useful), and may be ordered from Acorn dealers.

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Using a VGA Monitor

David Spencer explores a cost-effective monitor option for the Archimedes.

Fancy a monitor with a quality approaching that of a multi-sync, yet probably costing less than a standard Acorn colour monitor? If the answer is yes, then you should consider a monitor designed to work with the VGA graphics standard used by PCs. You can typically pick up these monitors, which provide up to 256 colours at a resolution of 640 by 480, for less than £200 by flicking through the adverts of one of the many PC-specific magazines. In this short article we show how to connect up and use such a monitor.

PLUGGING IT IN

The first stage is to make up a suitable lead to connect the monitor to your computer. VGA monitors usually have a 15-way miniature-D connector, which looks similar to the 9-way D used on the Archimedes, but has three rows of pins instead of two. Figure 1 shows how the connections should be made. Any pins not shown on either connector should be left open. Note that you need a 9-way *plug* at the computer end, and a 15-way *socket* at the other. If your monitor has a different connector then you will need to check the signal names given in figure 1 against its documentation, and wire the lead accordingly.

Computer	Monitor	Signal
1	1	Red
2	2	Green
3	3	Blue
4	13	Horizontal sync
5	14	Vertical sync
9	4	Ground

Figure 1. Monitor cable connections

CONFIGURING THE COMPUTER

Having connected up the monitor, the next stage is to configure the computer to work properly with it. This is necessary because VGA monitors require separate horizontal and vertical synchronisation signals, while standard monitors combine these into a single composite signal. The configuration consists of changing two links within the computer, and issuing a *Configure command. The first link is needed to switch the H-sync signal onto pin 4 of the connector. This is a three pin link which normally has a shunt fitted between the centre pin ('2') and one outside pin labelled '3'. This shunt must be moved to connect the centre pin and the other outside pin, '1'. The second link, which puts the V-sync signal onto pin 5 is a two pin link which has to have a shunt fitted, except on a 310 or 540 where it is a three pin link and must be treated as before.

Figure 2 shows the link numbers for various models of Archimedes. If you are not confident about performing these operations yourself, then you should take your computer to an Acorn dealer, who will also be able to supply the shunt needed to make the two pin link.

Model	3-way link	2-way link
310/440	LK10	LK11
400/1	LK1	LK2
540	LK6	LK3
A3000	LK24	LK25

Figure 2. Link numbers

Once the links have been set issue the command *Configure Sync 0 to select separate sync signals. If you wish to use a standard monitor at some later date you must change the links back and use *Configure Sync 1. Finally, to tell the computer you are using a VGA monitor, enter *Configure MonitorType 3.

PROBLEMS

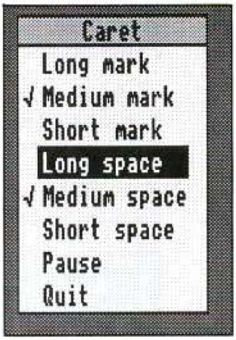
With a VGA monitor, the only modes available are 25-28, which provide 640 by 480 pixels with 2, 4, 16 and 256 colours respectively. The Desktop, and all RISC OS compliant software, will function in these modes just as well as in any others. However, some non-compliant programs, particularly games, require a fixed resolution, or a certain mode. In this case, the only option is to use a mode defining program and one of the available VIDC enhancers to mimic standard modes. This is, however, beyond the scope of this article. RU

A Desktop Caret Flasher

by Lee Calcraft

The visibility of the caret (the Arc's vertical text cursor) depends very much on its native colour and the colour of the background currently in use. With a white background, the default caret colour in all colour modes is red, which has a high visibility. On the other hand, if you are using Edit for example with a black text background, and the Desktop is in mode 12, the caret is cream in colour, and is often hard to find in a sea of white text.

The present application should solve the problem. It causes the caret to flash gently, irrespective of what application is currently displaying it. The menu of !Caret, as this application is called, has eight entries. The top six allow you to set both the on and the off times of the flash, while the remaining two allow you to pause the application, so that the flashing no longer occurs, or to quit the flasher altogether.



The menu allows the caret flasher's mark-space ratio to be altered, and the flasher to be paused.

To build this application, you will need to create an application directory named !Caret, and to place suitable !Boot, !Run, !RunImage and !Sprites files within this directory. Code for the first three is given in listings 1-3 respectively. The first two are Obey files (Select *Create* then *New Obey file* from Edit's menu), while the third is a Basic program. Finally, the !Sprites file should contain a single mode 12 sprite called !caret, 34 pixels wide by 17 pixels high.

HOW IT WORKS

The program works by using the calls SYS "Wimp_GetCaretPosition" and SYS "Wimp_SetCaretPosition" alternately to turn the caret on and off. The timing is determined by a parameter passed to SYS "Wimp_PollIdle", which is used in place of the more familiar SYS "Wimp_Poll". Its effect is to request that the Wimp returns a null event after a specified time interval.

The time settings have been chosen to provide a wide range of flash rates, but if you do not find them to your liking, you can alter the defaults by changing the values assigned to *mark%* and to *space%*, both initially (at line 100), and in PROCmenuselect (lines 950-1000).

Listing 1. !Boot Obey file for !Caret.

```
IconSprites <Obey$Dir>.!Sprites
Set Caret$Dir <Obey$Dir>
```

Listing 2. !Run Obey file for !Caret.

```
Obey <Obey$Dir>.!Boot
WimpSlot -min 16K -max 16K
Run <Caret$Dir>.!RunImage
```

Listing 3

```
   10 REM ><Caret$Dir>.!RunImage
   20 REM >Caret-4
   30 REM Program    Caret Flasher
   40 REM Author     Lee Calcraft
   50 REM Version    A 0.40
   60 REM Program    Subject to Copyright
   70 REM            Not Public Domain
   80 :
   90 DIM blk% &200,menu% &100,cb% 24
  100 mark%=60:space%=30
  110 quit%=FALSE:paused%=FALSE
  120 on%=FALSE:$blk%="TASK"
  130 SYS "Wimp_Initialise",200,!blk%,"C
aret flash" TO version%,task%
  140 baricon%=FNicon(-1,0,0,68,68,&3002
,"!Caret")
```

```
150 PROCdrawmenu(menu%,"Caret,Long mark,Medium mark,Short mark,Long space,Medium space,Short space,Pause,Quit")
160 PROCtick(1,TRUE):mark_tick%=1
170 PROCtick(4,TRUE):space_tick%=4
180 ON ERROR IF FNwimperror THEN END
190 REPEAT
200   PROCpoll
210 UNTIL quit%
220 IF on% THEN
230   on%=FALSE
240   cflag%=cflag% AND &FDFFFFFF
250   SYS "Wimp_SetCaretPosition",cb%!0,cb%!4,cb%!8,cb%!12,cflag%,cb%!20
260 ENDIF
270 SYS "Wimp_CloseDown"
280 END
290 :
300 DEF PROCpoll
310 IF paused% THEN
320   SYS "Wimp_Poll",&1831,blk% TO reason%
330 ELSE
340   SYS "OS_ReadMonotonicTime" TO time%
350   IF on% THEN time%+=space% ELSE time%+=mark%
360   SYS "Wimp_PollIdle",,blk%,time% TO reason%
370 ENDIF
380 CASE reason% OF
390   WHEN 0    :PROCcaret
400   WHEN 6    :PROCbuttons
410   WHEN 9    :PROCmenuselect
420   WHEN 17,18:IF blk%!16=0 THEN quit%=TRUE
430 ENDCASE
440 ENDPROC
450 :
460 DEF PROCcaret
470 SYS "Wimp_GetCaretPosition",,cb%
480 IF cb%!0=-1 THEN ENDPROC
490 cflag%=cb%!16
500 on%=(cflag% AND (1<<25))=0
510 cflag%=cflag% EOR (1<<25)
520 SYS "Wimp_SetCaretPosition",cb%!0,cb%!4,cb%!8,cb%!12,cflag%,cb%!20
530 ENDPROC
540 :
550 DEF PROCbuttons
560 x%=!blk%:y%=blk%!4
570 IF blk%!12=-2 AND (blk%!8 AND 2) THEN PROCshowmenu(menu%,x%,y%,TRUE,entries%)
580 ENDPROC
590 :
600 DEF PROCdrawmenu(menu%,menu$)
610 menu%?12=7:menu%?13=2
620 menu%?14=7:menu%?15=0
630 menu%!16=200:menu%!20=44
640 menu%!24=0:ptr%=menu%+28
650 $menu%=LEFT$(menu$,INSTR(menu$,",")-1)
660 menu$+=","
670 entries%=0
680 WHILE menu$<>""
690   menu$=MID$(menu$,INSTR(menu$,",")+1)
700   IF menu$<>"" THEN
710     !ptr%=0:ptr%!4=-1
720     ptr%!8=&7000021
730     $(ptr%+12)=LEFT$(menu$,INSTR(menu$,",")-1)
740     ptr%+=24
750     entries%+=1
760   ENDIF
770 ENDWHILE
780 ptr%!-24=ptr%!-24 OR &80
790 ENDPROC
800 :
810 DEF PROCtick(item%,tickit%)
820 byte%=menu%?(28+item%*24)
830 IF tickit% THEN byte%=byte% OR 1 ELSE byte%=byte% AND &FE
840 menu%?(28+item%*24)=byte%
850 ENDPROC
860 :
870 DEF PROCshowmenu(menu%,x%,y%,oniconbar%,entries%)
880 IF oniconbar% THEN ypos%=96+entries%*44 ELSE ypos%=y%+20
890 SYS "Wimp_CreateMenu",,menu%,x%-64,ypos%
900 ENDPROC
910 :
920 DEF PROCmenuselect
930 choice%=!blk%
940 CASE choice% OF
950   WHEN 0:mark%=120
960   WHEN 1:mark%=60
970   WHEN 2:mark%=30
```

Continued on page 45

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Acorn's Desktop Development Environment

David Spencer looks at an exciting advance for Archimedes programmers.

Acorn's *Desktop Development Environment* or DDE for short, is a new product suite aimed at developers of serious and commercial software, and is designed to allow Desktop applications to be developed from within the Desktop environment. It is a development of three existing products, *Release 3 ANSI C*, *ARM Assembler* and the *Software Developer's Toolbox (SDT)*, and replaces all of these. The DDE is sold in two units - the C compiler and the Assembler. Each unit contains the same general tools described below, but one includes the C compiler, while the other includes the stand-alone assembler, *Aasm* and the object assembler *ObjAsm*.

THE DDE TOOLS

As well as providing the actual C compiler or assemblers, the DDE suite includes a number of tools designed to provide a complete development environment. The full set of tools is listed in figure 1.

	Common tools
!SrcEdit *	Source code editor
!Make *	Project manager
!DDT *	Symbolic debugger
!FormEd *	Window template editor
!Squeeze	Program compressor
!AMU	Make utility
!Common	File comparison
!DecAOF	Decode object files
!DecCF	Decode chunk files
!Diff	Difference between files
!Find	Search a file
!LibFile	Library management
!Link	Object file linker
!ObjSize	Object file size
!WC	File word/line count
	C only
!CC	C compiler
!CMHG	C module generator
!ToANSI	Convert source to ANSI C
!ToPCC	Convert source to UNIX C
	Assembler only
!AAsm	Stand-alone assembler
!ObjAsm	Object code assembler

Figure 1. DDE Tools

The majority of these tools are new versions of ones previously supplied with the SDT. There are however some new ones, for example *DecAOF* and *DecCF* to decode object and library files, and *ObjSize* to list size details of object files.

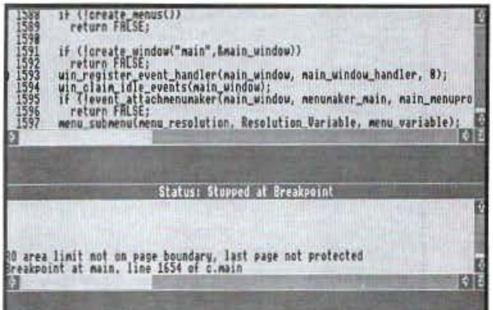
THE DESKTOP APPLICATIONS

Of the tools making up the DDE, only four (marked in figure 1 with a star) are native RISC OS applications. The first of these is *SrcEdit* (Source Edit), which is very similar to *Edit*, but has some additional features aimed at developers, including offering interactive help on language commands. For example, if you were to highlight the word 'printf' in a C source file and select the Help option, you would be presented with a brief summary of C's 'printf' function. *SrcEdit* also allows you to set an effective work area width for editing, without being limited by the number of columns that can be displayed on screen.

A very useful feature in *SrcEdit* is a mechanism called *throwback*. With throwback in operation, any errors generated by the compiler or assembler are listed in a window. Double clicking on any error will load the source file containing it, and select the line at which it occurred. This can greatly speed up correcting simple errors.

PROJECT MANAGEMENT

Make is a new multi-tasking project management utility. Its purpose is to automatically build the *make* files used by *AMU* to build complete projects. By dragging all the files required to make a particular executable file into *Make*, it automatically creates the necessary *make* file. Subsequently, selecting the project from the icon bar menu will open its directory viewer, and clicking on 'Make' will ensure that all the various parts are compiled, assembled and linked correctly to take into account any changes made since the project was last re-built.



```
if (!create_menus())
  return FALSE;

if (!create_window("main",&main_window))
  return FALSE;
win_register_event_handler(main_window, main_window_handler, 0);
win_claim_idle_events(main_window);
if (!event_attachmenumaker(main_window, menumaker_main, main_menupro
  return FALSE;
menu_submenu(menu_resolution, Resolution_Variable, menu_variable);
```

```
Status: Stopped at Breakpoint
```

```
0 area limit not on page boundary, last page not protected
reakpoint at main, line 1654 of c.main
```

DDT and other tools in operation

DESKTOP DEBUGGING

By far the most powerful of the Desktop tools is the source level debugger *DDT*. This performs a similar function to *ASD* previously supplied with Release 3 C, in that it allows a compiled or assembled program to be debugged by referencing back to the original source. So, for example, it is possible to stop execution at a particular source line, and examine or even alter source-level variables.

DDT's big plus over *ASD*, however, is that it can debug Desktop applications. To give you an idea about how useful this is, imagine a massive DTP package written in C. Suppose that this includes a submenu two levels down to select a font, and for some reason this one bit of code is not working properly. Using *DDT* it would be possible to set a breakpoint to enter the debugger each time the font menu is opened. The package could then be used perfectly normally until the troublesome menu is opened. At this point, the debugger would spring into life suspending the target program and popping up two windows - one showing the source code line being executed, and the other status information. You could then look at and change variables at will, and even call functions or alter the program flow. Finally, you can continue execution where you left off.

The source code display can be switched between assembler and C as needed, assuming the original program is in C, and as well as setting breakpoints at particular program locations you can also set watchpoints to stop when specified variables change. Incidentally, *DDT* is not truly multi-tasking, because while the debugging windows are displayed you are locked out from any other applications. This stems from the fact that RISC OS doesn't allow task switching while one task is redrawing a window. To get around this, *DDT* includes a complete window manager of its own! *DDT* does however multi-task normally in the sense that the program being debugged co-exists perfectly with other applications.

THE TEMPLATE EDITOR

The DDE contains a new version of *FormEd*, the window template editor. The main enhancement over the old version is that when a template file is loaded, the individual templates are represented in a viewer window, rather than being splattered over the desktop resulting in total confusion over which windows are templates and which are genuinely open. To edit a template you simply open it by double-clicking on its entry in the viewer and close it again when finished. It is now possible to copy templates, and also to position icons by exact co-ordinates.

While *FormEd* still doesn't allow multiple template files to be open at once, you can now close one file and open another without having to reload the whole application. And, a very welcome addition is that *FormEd* now stops you creating templates with no identifier which are then lost without warning.

THE FRONTEND MODULE

The other seventeen DDE tools are not written to run under the Desktop, let alone multi-task. To integrate these into the Desktop environment, Acorn have come up with a neat solution in the form of the *Frontend* module. This allows any non-interactive application that is normally started from the command line (for example the C compiler itself) to be run in a window using pre-emptive multi-tasking, similar to the Task window feature of *Edit*.

The *Frontend* module provides a standard icon bar icon for each tool loaded. Clicking on this icon opens a window which allows the input files to the command to be dragged in and the command line options to be set via menus, option icons and radio buttons. When the command is executed you can choose to have the output displayed in a task window, or just a summary of the available output shown. You can switch between the two modes, and on completion any files produced by the command can be saved.

For example, when the C compiler is started you are presented with a window that allows the source files and include files to be dragged in, and provides radio buttons for the most common options such as 'compile only'. A menu contains all the other compiler options, such as selecting PCC mode. When all the options have been set up, the compiler can be run, and you can toggle between the two display modes. While running, the system still multi-tasks, and indeed two or more programs could be compiled at once. When compilation is complete, a save box allows the compiled program to be saved. Any errors that occur are displayed in a throwback window for *SrcEdit* as described earlier.

All the other applications running under *Frontend* function in a similar way, though some default to running automatically when a file is dragged to the icon bar icon, rather than waiting for options to be set.

An interesting point about the *Frontend* module is that it allows *any* non-interactive application to multi-task, simply by creating a templates file, and a textual description of the menus etc. Acorn plan to make this module available to developers, and I suspect we will see it cropping up in many packages.

ENHANCEMENTS

As well as a totally new operating environment, actual tools such as the compiler and assembler have been enhanced for the DDE. The C compiler, now known as ANSI C release 4, has been modified to improve ANSI compliance, and RISC_OSLIB extended to provide functions for printing and interactive help among others. The assemblers now support the ARM3's SWP instruction, produce output suitable for use with *DDT*, and allow C-type escape sequences to be used in text strings.

DOCUMENTATION

The complete set of user guides runs to over 1000 pages, split into three tomes - separate guides for the C compiler, assemblers and other tools. As well as describing how to use the software the manuals also cover the Clib and RISC_OSLIB functions and the ARM instruction set, as well as giving important information on how to write Desktop applications. There is also a set of handy reference cards, four for C, three for the Assembler, covering topics such as disc directory structures and command line options.

The manuals are very well written, but are strictly for reference only, with very little tutorial information. Copies of the *RISC OS Programmer's Reference manual* and the *RISC OS Style Guide* also remain essential for any serious development work.

CONCLUSION

Acorn have a real winner in the DDE. They have finally managed to produce the package that serious developers have long yearned for. The price of the two units is not excessive considering their contents, though I would have liked there to be a combined package that could have saved a few pennies. Owners of existing versions of the C compiler or Assembler will be able to upgrade at reduced cost, though details of this have yet to be finalised. For multi-user environments, site licences are available at four times the stand-alone price, and the user guides can be purchased separately.

It would be very nice to think that with such a good development system to add to an already superb hardware platform and operating system that major software houses will begin to look seriously at the Archimedes. All that said though, the DDE will find as much use with the advanced amateur programmer as with the professional developer.

Product	*Desktop C*
Supplier	*Acorn Computers* *Fulbourn Road,* *Cherry Hinton,* *Cambridge CB1 4JN.* *Tel. (0223) 245200*
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Worldwide Time Keeping —

Display the time from around the world with Mike Ironmonger's latest application.

The program described here allows you to display concurrently on screen the current time and date for up to sixteen world-wide locations, and these displays will continue to be updated in real time in multi-tasking mode.

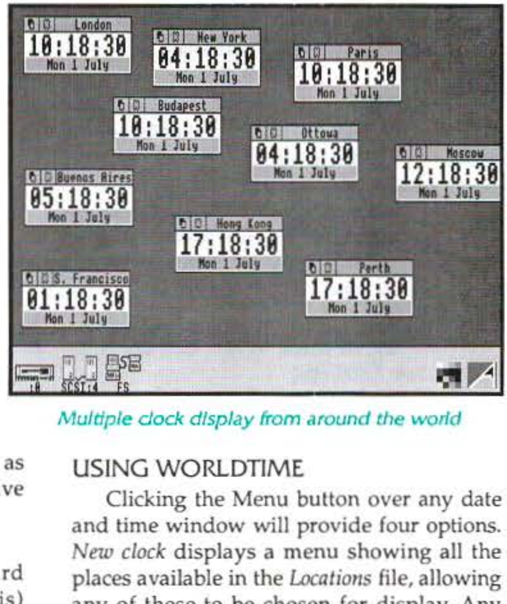
You can create your own list of locations from which to choose those for display, and a status file allows you to determine your own start-up settings. A further feature allows a choice between GMT and BST.

INSTALLING WORLDTIME

To set up this system you will need to create an application directory called *!WorldTime*, and save within this application directory four files, *!Run*, *!RunImage*, *!Sprites* and *Locations*. A further file called *Status* is automatically created the first time the application is run. The !Run file (use the Edit *Create* option, and then *New Obey file*) should be set up as shown in listing 1. The !Sprites file should contain a suitable mode 12 sprite 34 pixels wide by 17 pixels high also called !WorldTime. The !RunImage file is the main program given as listing 2. Type this in, using Basic, and save it in the application directory.

The file *Locations* is a straightforward ASCII text file (use Edit again for this) containing a list of the locations whose date and time you may wish to display. Each line of this file should refer to a different location, with the name first (maximum 12 characters), followed by a comma, followed by the time at that place (using the 24 hour clock) corresponding to 12 noon (GMT) in London. The first entry in the file should be for London itself as this acts as a reference. Any number of locations may be included, and the file can be further edited as you wish.

When the application is run from the Desktop for the first time, the program recognises that there is no Status file, defaults to GMT, and puts the London clock on the screen. The user should then change to BST if necessary and save the status (see below).



Multiple clock display from around the world

USING WORLDTIME

Clicking the Menu button over any date and time window will provide four options. *New clock* displays a menu showing all the places available in the *Locations* file, allowing any of these to be chosen for display. Any place already displayed is greyed out.

The second option allows a switch between GMT and BST, with an option to update the Arc's real-time clock as well if required. Note that changing to BST affects only the time for London. Other countries may or may not use summer time, and the dates of this will differ from the UK. To preserve the normal time differences, simply set your system clock to BST, but continue to use the GMT option in WorldTime.

Next, the *Save status* option will save to the Status file the current choice of GMT or BST, and the details of which places are currently displayed and their position on the screen. Whenever WorldTime is restarted it will use the information in the Status file to recreate this same display. The final option, *Quit*, terminates the application, and removes all of its windows from the screen.

Listing 1: !Run Obey file for !WorldTime

```
| !Run file for !WorldTime
Set WorldTime$Dir <Obey$Dir>
WimpSlot -min 32K -max 32K
Run <Obey$Dir>.!RunImage
```

Listing 2

```
   10 REM           >!RunImage
   20 REM Program   WorldTime
   30 REM Version   A1.0
   40 REM Author    Mike Ironmonger
   50 REM RISC User September 1991
   60 REM Program   Subject to copyright
   70 REM           Not public domain
   80 :
   90 ON ERROR VDU4:PRINT REPORT$;" at l
ine ";ERL:END
  100 PROCinitialise
  110 ON ERROR A%=FNerror(ERR,REPORT$,1)
  120 :
  130 REPEAT
  140 SYS "Wimp_PollIdle",&81932,block%,
time% TO R%
  150 CASE R% OF
  160  WHEN 0 : PROCupdate_clocks
  170  WHEN 2 : SYS "Wimp_OpenWindow",,b
lock%
  180  WHEN 3 : PROCclose_window
  190  WHEN 6 : PROCmenu_click(!block%-6
4,block%!4+12)
  200  WHEN 9 : PROCmenu_select(!block%,
block%!4)
  210  WHEN 17,18 : quit%=(block%!16=0)
  220 ENDCASE
  230 UNTIL quit%
  240 SYS "Wimp_CloseDown"
  250 END
  260 :
  270 *** Reason Codes
  280 :
  290 DEF PROCupdate_clocks
  300 ?t_uk%=3:SYS "OS_Word",14,t_uk%
  310 FOR L%=0 TO last%
  320  IF window%(L%) PROCupdate_clock
  330 NEXT
  340 SYS "OS_ReadMonotonicTime" TO T%
  350 WHILE T%-time%>0 time%+=100
  360 ENDWHILE
  370 ENDPROC
  380 :
  390 DEF PROCclose_window
  400 IF clocks_on%=1 ERROR 1,"Can't clo
se last clock."
  410 L%=0:WHILE window%(L%)<>!block%:L%
+=1:ENDWHILE
  420 SYS "Wimp_DeleteWindow",,block%
  430 SYS sop%,&119,spr%,STR$L%
  440 window%(L%)=0:clocks_on%-=1
  450 ENDPROC
  460 :
  470 DEF PROCmenu_click(X%,Y%)
  480 m_gmt_bst%?28=1-gmt%
  490 m_gmt_bst%?52=&80+gmt%
  500 m_main%?38=-64*(clocks_on%=16)
  510 P%=m_locs%+38:FOR L%=0 TO last%
  520 ?P%=-64*(window%(L%)>0):P%+=24
  530 NEXT
  540 SYS "Wimp_CreateMenu",,m_main%,X%,
Y%
  550 ENDPROC
  560 :
  570 DEF PROCmenu_select(S1%,S2%)
  580 SYS "Wimp_GetPointerInfo",,block%
  590 stay%=(block%!8=1)
  600 CASE S1% OF
  610  WHEN 0 : IF S2%>-1 PROCnew_clock(
S2%,128+S2%*12,884-S2%*12)
  620  WHEN 1 : IF S2%<>gmt% PROCgmt_bst
  630  WHEN 2 : PROCsave_status
  640  WHEN 3 : quit%=TRUE
  650 ENDCASE
  660 IF stay% PROCmenu_click(0,0)
  670 ENDPROC
  680 :
```

```
  690 *** Clock Drawing
  700 :
  710 DEF PROCupdate_clock
  720 PROCadd(tdiff%(L%))
  730 SYS sop%,&13C,spr%,"temp" TO R0,R1
,R2,R3
  740 SYS "OS_Write0",block%+1
  750 SYS sop%,&13C,spr%,STR$L%
  760 SYS sop%,&134,spr%,"temp",0,-8,,sc
ale%,trans%
  770 SYS sop%,R0,R1,R2,R3
  780 !block%=window%(L%):block%!4=0
  790 block%!8=0:block%!12=0
  800 SYS "Wimp_SetIconState",,block%
  810 old%=!date%(L%)
  820 SYS "OS_ConvertDateAndTime",t_loc%
,date%(L%),17,date$
  830 IF old%<>!date%(L%) block%!4=1:SYS
 "Wimp_SetIconState",,block%
  840 ENDPROC
  850 :
  860 *** Miscellaneous
  870 :
  880 DEF PROCgmt_bst
  890 gmt%=1-gmt%:inc%=60-120*gmt%
  900 tdiff%()+=inc%:tdiff%(0)-=inc%
  910 IF FNerror(1,"Do you want the real
-time clock adjusted?",19)=1 PROCadd(-in
c%):?block%=8:SYS "OS_Word",15,block%
  920 ENDPROC
  930 :
  940 DEF PROCadd(inc%)
  950 A%=!t_uk%:B%=A%+inc%*6000:C%=t_uk%
?4
  960 IF inc%>0 AND (A%>>>1)>(B%>>>1) C%
+=1
  970 IF inc%<0 AND (A%>>>1)<(B%>>>1) C%
-=1
  980 !t_loc%=B%:t_loc%?4=C%
  990 SYS "OS_ConvertDateAndTime",t_loc%
,block%+1,255,time$
 1000 ENDPROC
 1010 :
 1020 DEF FNerror(err%,err$,flag%)
 1030 IF err%=&108D4 OR err%=&108D5 THEN
 =0
 1040 !block%=err%:$(block%+4)=err$+CHR$
0
 1050 SYS "Wimp_ReportError",block%,flag
%,"WorldTime" TO ,S%
 1060 SYS "Wimp_GetPointerInfo",,block%
 1070 IF block%!8=0 S%=2
 1080 =S%
 1090 :
 1100 *** Initialisation
 1110 :
 1120 DEF PROCinitialise
 1130 DIM block% 255,t_uk% 4,t_loc% 4
 1140 SYS "Wimp_Initialise",200,&4B53415
4,"WorldTime"
 1150 :
 1160 DIM loc$(99),tdiff%(99)
 1170 DIM window%(99),date%(99)
 1180 DIM spr% 15195:spr%!0=15196
 1190 spr%!4=0:spr%!8=16:spr%!12=16
 1200 SYS "OS_SWINumberFromString",,"OS_
SpriteOp" TO sop%
 1210 SYS sop%,&10F,spr%,"temp",,72,8,0
 1220 DIM scale% 15
 1230 scale%!0=2:scale%!8=1
 1240 scale%!4=2:scale%!12=1
 1250 DIM trans% 1:trans%?0=0:trans%?1=8
 1260 :
 1270 quit%=FALSE
 1280 clocks_on%=0
 1290 time$="%24:%MI:%SE"+CHR$0
 1300 date$="%W3 %ZDY %MO"+CHR$0
 1310 last%=FNload_locations
 1320 PROCload_status
 1330 SYS "OS_ReadMonotonicTime" TO time
%
 1340 :
 1350 PROCcreate_menu(m_locs%,"New clock
",208,last%+1)
 1360 FOR L%=0 TO last%
 1370 PROCmenu_item(loc$(L%),0,-1)
 1380 NEXT:I%!-24=&80
 1390 :
 1400 PROCcreate_menu(m_gmt_bst%,"GMT/BS
T",96,2)
 1410 PROCmenu_item("GMT",0,-1)
 1420 PROCmenu_item("BST",&80,-1)
 1430 :
 1440 PROCcreate_menu(m_main%,"World Tim
e",192,4)
```

Continued on page 58

Archimedes Software

RISC OS Terminals Plus

A new communications package for the Archie. Consisting of Viewdata and text terminals providing accurate ANSI, VT100 and VT220 emulations. Fully RISC OS compliant. File transfer protocols supported include, ASCII, Xmodem, Ymodem, Zmodem, Kermit and CET Telesoftware. Unlike most programs, these have been written from scratch in ARM code, making them compact, and fast. Easy exchange of data with other programs e.g. mark text for transfer to Edit. File transfers can take place whilst you work with other things. ACF scripts let logon and configuration be set up for easy reuse. Zmodem allows the resumption of interrupted downloads and achieves fast transfers.

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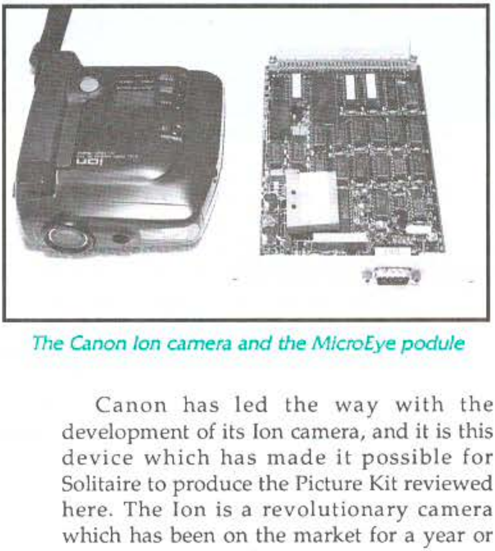
Picture Kit

Alan Wrigley looks at an exciting new item of hardware for the Archimedes.

As a keen photographer, I used to dream about the time when it would be possible to take photographs electronically, see them instantly, and process them with a computer. This was way back in the days before the BBC micro, let alone the Archimedes. Well, that time has now come, and although the technology is still in its pioneering stages, and the quality cannot yet match that from conventional photographic processes, it is still an exciting development which I am sure will have an important future.



The Canon Ion camera and the MicroEye podule

Canon has led the way with the development of its Ion camera, and it is this device which has made it possible for Solitaire to produce the Picture Kit reviewed here. The Ion is a revolutionary camera which has been on the market for a year or two now, and which stores its pictures on a floppy disc, instead of the usual gelatine-based film. Because the pictures are thus in digital format, they can be output as a video signal, enabling them to be processed by a computer fitted with a digitiser board, displayed on a television screen or printed in full colour on a video printer, for example.

THE PACKAGE

The Picture Kit is a comprehensive package containing just about everything you could possibly need to produce and process pictures. The Ion camera itself sports a smart and modern-looking design; advantage has been taken of the fact that since there is no need to provide space for a film path, the camera can be made much more compact. It is fitted with a standard lens (equivalent to 51mm on a 35mm camera), and is supplied with wide-angle and telephoto adaptors which clip onto the front of the lens. The camera runs from a rechargeable battery pack which slots into the back, or from a mains adaptor which is supplied. The latter also provides video output sockets, and clips onto a battery charger, thus providing a complete input/output station when the camera is communicating with other equipment. Other accessories supplied with the camera include a macro stand and an RF unit which enables you to connect the camera directly to the aerial input of a television - more of this later.

The rest of the Picture Kit comprises Digithurst's *MicroEye* video capture board, in the form of a podule for either 300/400 series or A3000 computers, together with controlling software, and an application called *Picture Book* which allows you to create "picture books" consisting of a set of linked pictures.

USING THE CAMERA

The camera stores its pictures on a 2-inch floppy disc, which slots into the underside of the camera body. The discs cost around £5, and hold 50 pictures each. The discs can be re-used over and over again, so if you are simply taking pictures to be exported elsewhere and do not need to keep them on the floppy once processed, running costs are minimal.

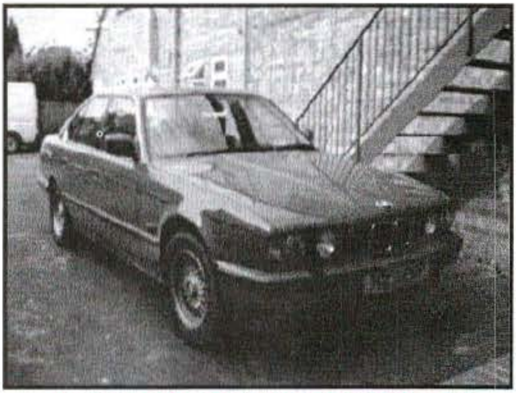
The camera is light in weight and easy to handle. It fits neatly into the hands and all the controls seem to be logically placed. When it comes to taking pictures, everything possible has been automated. The lens has automatic focusing; the normal range is from infinity to 1 metre, while a macro switch allows focusing down to 27cm. Exposure is also automatic, and a built-in flash operates automatically if there is insufficient light. The camera has automatic white balancing; i.e. white looks white whether in daylight, artificial or fluorescent lighting. This works very well and there was no trace of a green cast under a fluorescent lamp.

Most of the features you expect from a conventional camera are also present on the Ion. There are facilities for date-stamping, exposure compensation for backlit subjects, continuous or preset interval shooting, and self-timer. It is important to note, however, that this is not a reflex camera; i.e. you are viewing the scene through a separate optical viewfinder and not through the main camera lens.

When shooting, the picture is stored in the next free slot on the disc, unless the disc is full. You can erase any or all of the pictures on the disc, and re-use the slots thus freed for further pictures. The camera will not let you record over an existing picture, so you cannot erase one accidentally.

THE RESULTS

Once you have taken your pictures, you can plug the camera into the mains adaptor/video distributor (there is also a direct video output socket on the camera if you don't want to bother with adaptors). Connections can be made to any device which accepts a video output, e.g. a video recorder or printer, or digitiser podule. As mentioned above, there is also an RF adaptor for direct connection to a television. This means that you can view your pictures on any television set. Not only that, but the camera also has a preview mode, enabling you to display on the television the scene through the viewfinder before you actually take the shot.



A sprite produced with the Solitaire Picture Kit

The stored picture is a 24-bit-per-pixel colour image, with a horizontal resolution of 768 pixels. Canon will only quote a minimum vertical resolution of 264, but Solitaire tell me that in their experience, the resolution is at least as high as VGA, i.e. 480. The pictures thus appear of excellent quality when viewed on a television or recorded on a video recorder. They look every bit as good as stills from a broadcast programme, and for those who have always wanted a quick and simple way of showing their photos on the television or perhaps recording sequences, rather than slides or prints, the Ion is an excellent way of doing so. Prints can be made, but this requires a video printer (around £1300 for the cheapest), and there does not appear to be any commercial printing service. Larger schools may well find it worth purchasing a printer however. The print quality is about the same as from a cheap snapshot camera, and the material cost around 30p each.

INTO THE ARC

So much for the camera itself. The rest of the package is concerned with getting the pictures into an Archimedes. The MicroEye board is available in either A3000 or 300/400 formats (a half-width podule for the latter). The software is simple to use, though not entirely RISC OS compliant, which caused me some frustration as I tried to use it instinctively as a true RISC OS application, only to find that it did not always follow the guidelines. For example, menus do not stay on the screen if selections are made with Adjust, and dialogue boxes do not equate Return on the last entry with OK.

The software does not work in real time, so it is only suitable for capturing still images, taking around 10 seconds to do so. However, a preview facility allows you to view the incoming picture in monochrome in a small window. This is much faster (virtually real time with the smallest window size), and enables you, for example, to cycle through the pictures on the Ion's disc before deciding which to capture fully. The captured image is digitised into a mode 15, 256-colour sprite, in either colour or monochrome. The size of the sprite is determined by the current size of the main window; in other words, you drag the window to the size you require before capture, and the sprite is created at that size. When you re-size a window, the relative proportions remain fixed in the same ratio as they would be for a full-sized screen, so if for example you drag the window out to a long thin shape, it will spring back to the correct shape when you release the button. At full screen size the sprite will be 640x256 pixels. Once captured, the sprite can be saved as usual.

Subjectively, the colour translation is excellent, though perhaps fractionally biased towards magenta. The brightness, contrast and colour saturation can all be adjusted on a percentage scale before capture, so by playing around with these settings an acceptable result can be achieved from most images. One criticism I had of the finished result was that there is a noticeable compression of the image in the horizontal plane, such that faces appear slightly elongated. Solitaire says that this is due to a slight discrepancy in the aspect ratio on full-screen sprites only, although I found the problem at other sizes too. At any rate, this is not a problem if the sprite is destined for import into a DTP package such as Ovation, where it can easily be stretched, but for other purposes this may not be so easy. Because of this, and the lack of true RISC OS compliance, I feel that the MicroEye software could perhaps benefit from some revision.

Having said this, however, Solitaire is already making improvements to the software, and I understand that it is now possible to produce mode 21 (640x512) and mode 24 (1056x256) sprites, though I was not able to see these at the time of the review.

USING THE PICTURES

Being stored as sprites, the images are in a standard format and can be used in the same way as any other sprite. This means that it is now possible to take photographs and import them directly into documents in a DTP package within a couple of minutes. This would seem to offer tremendous scope for publishers everywhere to finally free themselves of the complex and time-consuming process of getting pictures on the page. For example, I could in theory take a picture to accompany this review, drop it into the document and scale and position it as I write.

However, it is unlikely to satisfy the DTP professional, since the picture resolution is no better than that from any other digitised video source (see illustration) - although the mode 21 and mode 24 pictures mentioned above may offer a significant improvement. But where video is itself the destination medium, for example promotional displays, the Picture Kit is ideal. There is a range of additional equipment available, such as a film adaptor to turn photographic slides into Ion pictures, and a video projector which projects video pictures onto a screen or wall (it can also take images directly from an Archimedes for projection).

CONCLUSIONS

Clearly this is a technology for the future. But despite this statement, I can still recommend the Picture Kit for a great many applications where video resolution is adequate. I have already mentioned promotional displays, but even for DTP it can be very useful where the highest professional quality is not required. In an educational environment it is ideal, being simple to use and above all producing results which can be seen instantly. It could be a valuable piece of hardware for those producing newsletters and school magazines, for example. And the ability to show the pictures on a television enables simple documentaries and display loops to be compiled with the absolute minimum of time and effort. With access to a video printer, instant prints are at your fingertips. In short, it is a worthwhile product for many applications and appears to do the job almost faultlessly.

One concern I do have, though, is over the pricing structure of the kit. The Canon Ion can be bought for around £500 plus VAT, which means that the MicroEye board and software is being sold for something like £750. Since the output from the Ion is a standard PAL video signal, it should be possible to use it with any of the other digitisers on the market, though these, being real-time capture devices, are geared to speed rather than accuracy. It may be worth investigating the possibilities if you are thinking of taking this route.

Product	*PC Picture Kit*
Supplier	*Solitaire* *6 The Quay, St Ives* *Huntingdon PE17 4AR.* *tel. (0480) 495608*
Price	*£1468.75 inc. VAT.* *(educational discount available)*

RU

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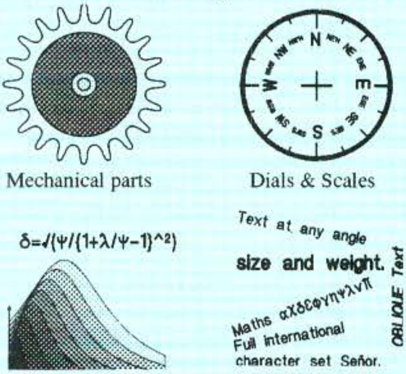

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Multi-Mode Sprite Viewer —

Alan Wrigley describes a program by Glynn Clements which demonstrates the use of colour translation.

As most users will know, the Archimedes has a range of screen modes, which allow 2, 4, 16 or 256 colours on screen at any one time. Clearly, the selection of colours available to an application in one mode is not necessarily going to match those in another. However, the concept of mode independence is very important when writing multi-tasking applications, since the decision to change mode must be left to the user, not to the application. RISC OS therefore provides a method of translating colours from one mode to another, and this is provided by the *ColourTrans* module.

ColourTrans currently exists as a separate module as part of the system resources supplied on Applications disc 1, and often with other applications which require it. In future releases of RISC OS it may be incorporated in ROM. The *Programmer's Reference Manual* describes the use of the module in detail (pp. 1399-1423) together with a description of the 17 SWI calls which it recognises.

THE PROGRAM

The program listed here is intended as a demonstration of the underlying principles of colour translation, but you may find it useful in its own right, perhaps to display sprites in your own applications. It is installed on the icon bar as usual, and dragging any sprite file to the icon bar icon will result in the first sprite in the file being displayed in a Desktop window. The program uses SWI ColourTrans_SelectTable to set up a colour translation table, as described below, which results in the sprite being displayed in colours which are suitable for the mode in use, regardless of the mode in which the sprite was created.

THE PRINCIPLES OF COLOUR TRANSLATION

The process by which this is achieved is in fact quite simple. The program first of all sets up a block of memory to hold default palettes for 2, 4, 16 and 256 colour modes, in case the sprite does not have its own palette (lines 400-590). Each palette entry requires 4 bytes, but note that in 256-colour modes, only 16 palette entries are required, since the other colours are derived from these 16.

The program next creates the window, icon bar icon and menu structure just like any other Wimp program, and then waits for a sprite file to be loaded, by intercepting the appropriate Wimp messages in the normal way. When you double-click on a sprite file, or drag it to the icon bar icon, PROCsprite_load is called (line 920), and the file loaded into a block of memory. If necessary, SWI Wimp_SlotSize is called to increase the size of the block. You may wonder why double-clicking on the file does not load Paint instead (provided Paint has been "seen"). The reason is that the Wimp passes round its DataOpen message to all active tasks to see if one wants to act upon it, before resorting to the default run action as specified in *Alias$@RunType_xxx*. As a result, *SprView* intercepts the message before any other action can be taken.

Once loaded into the block, the sprite source mode and palette information are then read. If there is no palette, the appropriate default block mentioned earlier is selected. If there is a palette, the palette data is read from the sprite block.

PROCmode (line 1410) is then called, which is really the heart of the translation process, using ColourTrans_SelectTable to set up the translation table. This SWI takes 5 parameters, which are the source mode, source palette pointer, destination mode, destination palette pointer and pointer to translation table. The source mode and source palette, *smode%* and *pal%*, have been determined as described above, while the destination mode and palette are passed as -1, i.e. current mode and palette. The translation table is located at *trans%*.

What the SWI does is to look at the colour of each entry in the source palette, select the nearest match in the destination palette and insert the colour number for the latter in the appropriate position in the table. This table can then be used as a parameter by OS_SpriteOp to plot a sprite in the new colours. This is in fact done at line 740 as part of the redraw code.

Two further points about the program are worth noting. Firstly, having set up the translation table, PROCsprite_load calculates the size of the sprite from the data in the sprite block, and calls Wimp_SetExtent to set the window to the correct size, after first calling OS_ReadModeVariable to determine the pixel-coordinate ratio for the mode in use.

Secondly, the program must be aware of any mode or palette changes generated by the user or another application. To do this, it intercepts Wimp messages 9 (palette change) and &400C1 (mode change). In both cases it calls PROCmode to reset the translation table, and in the case of a palette change it forces a redraw of the window (PROCforce at line 1940). The latter operation is performed automatically by the Wimp in the case of a mode change.

And that's really all there is to it. I have not covered the other functions of ColourTrans, but this article may whet your appetite to read the information in the PRM, and also the section on sprites, in particular page 384, for details on how to use the translation table.

```
  10 REM          >!RunImage
  20 REM Program  Sprite viewer
  30 REM Version  A1.0
  40 REM Author   Glynn Clements
  50 REM RISC User September 1991
  60 REM Program  Subject to Copyright
  70 REM          Not Public Domain
  80 :
  90 ON ERROR MODE 0:PRINT REPORT$+" at
 line "+STR$(ERL):END
 100 PROCinit
 110 ON ERROR PROCerror
 120 WHILE NOT(quit%)
 130  PROCpoll
 140 ENDWHILE
 150 SYS"Wimp_CloseDown"
 160 END
 170 :
 180 DEF PROCpoll
 190 SYS "Wimp_Poll",1,bk% TO reason%
 200 CASE reason% OF
 210  WHEN 1: PROCredraw
 220  WHEN 2: SYS "Wimp_OpenWindow",,bk
%
 230  WHEN 3: PROCclose
 240  WHEN 6: IF bk%!12=-2 AND bk%!8=2
THEN SYS "Wimp_CreateMenu",,menu%,bk%!0-
64,140
 250  WHEN 9: quit%=TRUE
 260  WHEN 17,18
 270   CASE bk%!16 OF
 280   WHEN 0:quit%=TRUE
 290   WHEN 1:PROCdatasave
 300   WHEN 3,5:PROCsprite_load
 310   WHEN 9:PROCmode:PROCforce
 320   WHEN &400C1: PROCmode
 330   ENDCASE
 340 ENDCASE
 350 ENDPROC
 360 :
 370 DEF PROCinit
 380 base%=HIMEM
 390 DIM bk% 256, menu% 44, title% 256,
 palbuff% 64, trans% 256
 400 DIM p0% 8, p1% 16, p2% 64, p3% 64
 410 p0%!0=&ffffff00:p0%!4=0
 420 p1%!0=&ffffff00:p1%!4=&bbbbbb00
 430 p1%!8=&77777700:p1%!12=0
 440 p2%!0=&ffffff00:p2%!4=&dddddd00
```

```
  450 p2%!8=&bbbbbb00:p2%!12=&99999900
  460 p2%!16=&77777700:p2%!20=&55555500
  470 p2%!24=&33333300:p2%!28=0
  480 p2%!32=&99440000:p2%!36=&00eeee00
  490 p2%!40=&00cc0000:p2%!44=&0000dd00
  500 p2%!48=&bbeeee00:p2%!52=&00885500
  510 p2%!56=&00bbff00:p2%!60=&ffbb0000
  520 p3%!0=&00000000:p3%!4=&10101000
  530 p3%!8=&20202000:p3%!12=&30303000
  540 p3%!16=&00004000:p3%!20=&10105000
  550 p3%!24=&20206000:p3%!28=&30307000
  560 p3%!32=&40000000:p3%!36=&50101000
  570 p3%!40=&60202000:p3%!44=&70303000
  580 p3%!48=&40004000:p3%!52=&50105000
  590 p3%!56=&60206000:p3%!60=&70307000
  600 quit%=FALSE
  610 smode%=-1
  620 SYS"Wimp_Initialise",200,&4B534154
,"Sprite viewer"
  630 PROCwindow
  640 PROCicon
  650 PROCmenu
  660 PROCmode
  670 ENDPROC
  680 :
  690 DEF PROCredraw
  700 SYS "Wimp_RedrawWindow",,bk% TO mo
re%
  710 ox%=bk%!4-bk%!20
  720 oy%=bk%!16-bk%!24
  730 WHILE more%
  740  SYS "OS_SpriteOp",512+52,base%,sp
rite%,ox%,oy%-(sy%<<ye%),0,0,trans%
  750  SYS "Wimp_GetRectangle",,bk% TO m
ore%
  760 ENDWHILE
  770 ENDPROC
  780 :
  790 DEF PROCclose
  800 smode%=-1
  810 PROCset_size(0)
  820 !bk%=han%:SYS "Wimp_CloseWindow",,
bk%
  830 ENDPROC
  840 :
  850 DEF PROCdatasave
  860 bk%!0=60:bk%!16=2
  870 bk%!12=bk%!8:bk%!36=-1
  880 $(bk%+44)="<Wimp$Scrap>"+CHR$(0)
  890 SYS "Wimp_SendMessage",17,bk%,bk%!
4
  900 ENDPROC
  910 :
  920 DEF PROCsprite_load
  930 LOCAL file$,i%,size%,h%,e%,scrap%
  940 LOCAL ERROR
  950 IF bk%!40<>&ff9 THEN ENDPROC
  960 scrap%=bk%!12
  970 bk%!16=4:bk%!12=bk%!8
  980 SYS "Wimp_SendMessage",17,bk%,bk%!
4
  990 i%=bk%+44:WHILE ?i%:i%+=1:ENDWHILE
:?i%=13
 1000 IF scrap% THEN $title%="<untitled>
" ELSE $title%=$(bk%+44)
 1010 h%=OPENIN($(bk%+44)):size%=EXT#h%+
4:CLOSE#h%
 1020 PROCset_size(size%)
 1030 ON ERROR LOCAL:RESTORE ERROR:PROCc
lose:ERROR ERR,REPORT$
 1040 base%!0=size%:base%!4=0
 1050 base%!8=16:base%!12=16
 1060 SYS "OS_SpriteOp",512+10,base%,bk%
+44
 1070 IF scrap% THEN OSCLI("Delete <Wimp
$Scrap>")
 1080 sprite%=base%+base%!8
 1090 :
 1100 SYS "OS_SpriteOp",512+40,base%,spr
ite% TO ,,,sx%,sy%,,smode%
 1110 e%=(sprite%!32-44)/8
 1120 pal%=palbuff%
 1130 CASE e% OF
 1140 WHEN 0
 1150  SYS "OS_ReadModeVariable",smode%,
9 TO ,,lbpp%
 1160  pal%=EVAL("p"+STR$(lbpp%)+"%")
 1170 WHEN 2,4,16
 1180  FOR i%=0 TO e%-1
 1190   pal%!(i%*4)=sprite%!(44+i%*8)
 1200  NEXT i%
 1210 WHEN 64
 1220  FOR i%=0 TO 15
 1230   pal%!(i%*4)=sprite%!(428+i%*8)
 1240  NEXT i%
 1250 OTHERWISE: ERROR 1,"Can't cope wit
h "+STR$(e%)+" palette entries"
```

Continued on page 60

Base
5

Base5 DBMS

Base5 DBMS is a suite of BASIC V functions and procedures designed to implement database programs. It is fully compatible with RiscBASIC and ABC compilers.

- Fully compatible with RISC OS
- User configurable
- Compatible with both Basic compilers
- Extensive search features
- Multiple databases in use simultaneously with easy communication between them
- Rigorous in-built error checking
- Comprehensive documentation of tutorial material, language reference and file format
- Numerous example databases and programs supplied
- Extensive import and export features
- A separate library of mathematical, statistical and calendar functions
- A fully multi-tasking database application !WimpBase5 as a get-you-started entry point

Base5 DBMS is available now for **£69** (no VAT). Site licences available.
Demonstration disc for **£5,** refundable on purchase of full system.

PairData

First of an increasing number of fully compatible products for use with Base5 DBMS.

- A BASIC V library for the creation and processing of coordinate pair data
- !MouseIn, a fully multi-tasking application to write scaled pointer coordinates directly into user designated fields
- Replace, count, delete or recall records meeting distance criteria
- Centre of Gravity, mean distances, nearest point calculations etc.
- Requires Base5 DBMS

Base5 PairData costs **£22.50** (no VAT) (**£18** for Registered Users)

Direct from:

Base5
P.O. Box 378
WOKING
Surrey GU21 4DF

Introductory Offer

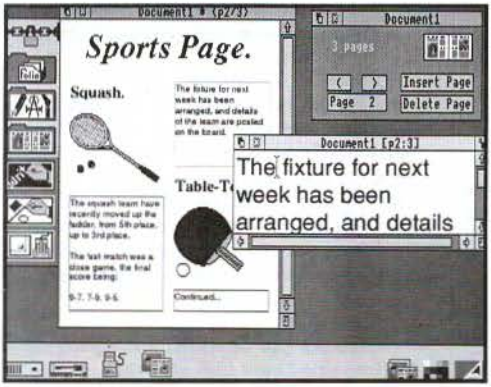
Base5 DBMS plus PairData for

£89 (no VAT)

Desktop Folio from ESM

Reviewed by Mark Sealey

Folio was a highly regarded word processor for the BBC micro, especially in an educational environment, and now its successor for the Archimedes, Desktop Folio, has been released. It combines simple word processing, desktop publishing (DTP) and interactive publishing in one apparently sophisticated yet easy-to-use system. It is designed specifically for schools, but will be of interest to anyone who needs to present material in this way. It has been extensively trialled (in over 40 education authorities) and has taken two years to produce.



Sports Page.

Squash.

The fixture for next week has been arranged, and details of the team are posted on the board.

The squash team have recently moved up the ladder, from 5th place, up to 3rd place.

The last match was a close game, the final score being:

9-7, 7-9, 9-6

Continued...

The fixture for next week has been arranged, and details

Desktop Folio in action showing tools pane

The package comes in a neat plastic carrying case, boasting no fewer than six discs (supplied in a proper flip-top 3.5" disc box), and four items of documentation.

INSTALLATION

Desktop Folio employs the key-disc type of protection; this means that although you can copy the relevant files and library resources etc. onto a set of working floppies (or a hard disc), the start-up disc will still be needed when you run the application. You may find this a nuisance, although ESM guarantees to replace it if it should ever prove faulty. In a school situation with multiple users, such a system can prove a liability, and extra care will be needed in storing this disc.

Desktop Folio is started by double-clicking on the first of the two main applications that form the package: *FolioWork*. The Font Manager must also have been seen. Desktop Folio then installs itself on the icon bar and you are ready to begin.

A single click on this icon opens the main window with a toolbox of seven options at its top left-hand side. This is where you begin to find how easy and intuitive Desktop Folio is. Rather too easy, perhaps, for despite the somewhat elaborate designs of these icons, they do nothing more than allow access to the three types of material available for a document, and permit you to write, draw and design a page. The top icon (a 'chain') toggles a facility for linking material to a particular frame.

Clicking Menu over the icon bar icon reveals a number of options. These include the usual 'Info' and 'Quit', plus options for showing the tools pane and the contents of the clipboard, as well as making, setting and saving certain configurations used at startup.

Clicking Menu within a document frame produces from three to six overlapping and context-sensitive options. This makes life very easy. Clicking Select usually allows alteration of the actual contents of that frame.

STATIONERY

In common with other DTP packages, the authors of Desktop Folio have coined their own terms for the basic building blocks of the application. *Stationery* sets the choice of font, size, colour of text etc., the frame characteristics, number of columns and so on. The aim of this is to free the user from worrying about layout later in order to concentrate on content.

In fact, a number of preset and customised stationery files exists, and these can be edited and added to. Because Desktop Folio is RISC OS compliant, separate bundles of stationery can be stored in separate directories (and with sensible names - letters, posters, notices etc.) on disc.

Rather confusingly, the pictures and text which appear in a document's frames are termed 'Resources'. Although such material will end up in a document, it keeps its own identity and can be independently edited, ensuring that when it is imported into a Desktop Folio document any changes that have taken place will be reflected at every occurrence.

A further advantage of this is that documents with subtly differing versions of the same basic material can be more easily worked on. Each saved document consists of an entire directory containing the separate components of your work, not just a single file. In fact, Desktop Folio creates and amends a separate file, called Control with a description of the various components of a document.

USING THE APPLICATION

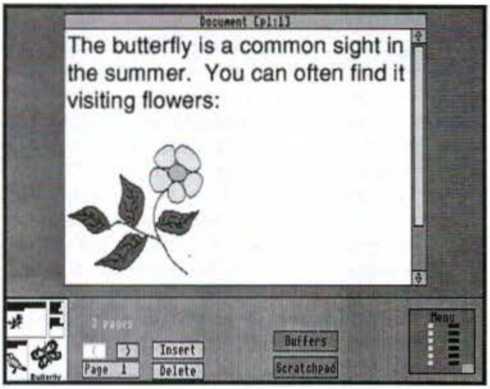
As with other DTP packages it is wise to plan and map out frames first. These are manipulated by means of standard dragging techniques in conjunction with Ctrl etc. It is possible to add, insert and delete pages as you would expect, and you can browse forward and backward through your multi-page document.

TEXT AND GRAPHICS

Text is not entered directly into a frame but via a separate window which is used as a scratchpad and obeys the usual rules of text editing in the Wimp environment. There is simple, icon-driven, cut, paste and delete etc. though little else (e.g. no footers or dictionary) in the text editing area.

It is possible to specify justification and the number of columns as well as to import text from other sources such as Edit and the Folio word processor.

Styles and formats can be applied to text by selecting the appropriate menu and changing the options in a (nearly) standard dialogue box. Desktop Folio copes well with the user who has multiple fonts. If an italic or bold version exists, it can also be selected and you see the result in real time in a preview box before applying it to the text throughout the whole document.



The butterfly is a common sight in the summer. You can often find it visiting flowers:

Desktop Folio as an interactive publisher

There is a handy clipboard, whose contents can be viewed, and text can be very effectively cut and pasted. These options are particularly well explained in the manual, being of special importance in the process of drafting and rewriting, which Desktop Folio has been designed to support. Units of text to be changed (from a single letter to a paragraph) are selected intelligently by the software for treatment.

Graphics can be added and edited merely by dropping Draw files or sprites into frames. There is some limited facility for manipulating them.

DESIGNING

Designing the layout, number and disposition of frames as well as their characteristics is one of the most important and at the same time difficult-to-implement operations in any DTP software. ESM has been particularly successful in this respect, and intelligent use is made of the keyboard in conjunction with the mouse to create page layouts. Particularly successful, too, is the way in which the contents of a frame are resized and dimensioned when the size of the frame itself is changed. This will be a real boon to pupils who just want to 'get on with it' without having to master the intricacies of font sizes and aspect ratios and the rest.

INTERACTIVE PUBLISHING

As with Longman-Logotron's Magpie and Oak Solutions' Genesis, pages can be made to behave interactively - i.e. by clicking over predetermined positions in the text something *happens*. A piece of stationery is so constructed that clicking on a particular frame opens a text window. Its title bar can contain, say, a question, to which you will give an answer that then forms the content of the frame.

DOCUMENTATION

The manuals and cards that accompany Desktop Folio are thorough if nothing else. There is a 'Read me First' booklet that gives a good overview and introduction not only to Desktop Folio itself, but also to the cut down version, *Simple Screen Folio*, which introduces a new user to the power of the full package. It comes on a separate disc, too.

In common with the other items of documentation, this first booklet contains much cross referencing. It is intended as a basic introductory overview. This 50 page booklet also sets the various distribution discs in context.

The 'Reference' guide is nearly 100 pages long, and deals again in logical order with the basic concepts, the tools (writing, drawing, designing) and the necessary operations to get the most from the package. There are six worked examples, and some useful technical information. This guide is rather poorly indexed, containing some errors in page references and some surprisingly superfluous entries, whilst others which might have been useful are omitted.

The 'Practical Ideas' booklet (60 pages in length) contains just that: quite useful in the educational context as it covers curricular matters very well. Lastly, there is a set of A5 sized cards with hard copy of some of the bundled clip art, a dozen activities - effectively a tutorial - and various crib sheets and quick reference guides.

CONCLUSIONS

Desktop Folio - to be successful - has to have the features that "the complete educational publisher", to quote ESM, needs, and at the same time it should be intuitive and robust to use.

On the first count the product has most of what educational users will want, from being genuinely WYSIWYG to boasting some flexibility of layout and customisation of stationery. Particularly important for pupils is the sense of purpose that will be conferred upon their writing by knowing that it can also have an instant audience thanks to the interactive publishing feature.

On the second, the structure is easy to understand, works well and is not too difficult to learn. Desktop Folio is not quite a 'point and go' package though. The menu structure may take younger users some getting used to.

This is not to say that it is at all obscure or unmanageable. The context-sensitive menus see to that. So does the way in which help is given during the processes of loading and saving work (including prompts to save work even if you try to overwrite a graphic with a new one).

Once you know what you want to do (and this is often the most difficult part of using a DTP package), achieving it requires only familiarity with the style of the package for your plans to be implemented.

There is ample feedback on such things as whether a frame is selected, where you have reached in a cut and paste exercise and so on. Typical, too, of the ease of use of Desktop Folio is the way in which entire frames can be moved and copied and their contents edited.

Although I believe it be overpriced, Desktop Folio will surely succeed. It has just the right amount of features (though you can always put together a list of what's missing), and has implemented them in an accessible and logical way that is consistent with the effective production of documents at this level.

Product	*Desktop Folio*
Supplier	*ESM,* *Duke Street, Wisbech,* *Cambs PE13 2AE.*
Prices	*£90 (standalone)* *£250 (Primary licence)* *£375 (Secondary licence)* *plus VAT (free p&p)*

RU

RISC User Disc Contents

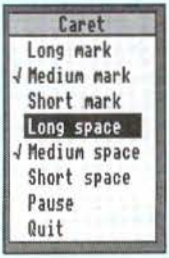
Multi-Mode Sprite Viewer

This program demonstrates the principles of colour translation between different screen modes, and can be used as a stand-alone application for displaying your own sprites. It is installed on the icon bar and will display the first sprite from any sprite file dragged to it in colours suitable for the mode in use, irrespective of the mode in which the sprite was created.

Virus Alert: An Auto-installer for the V_Alert Module

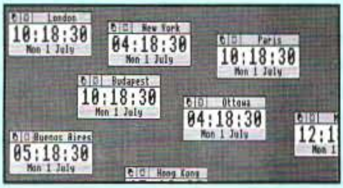
Install the virus protection system (Virus Alert) from RISC User July/August 1991 into any of your applications, using the auto-installing program from this month. Simply drag the desired application's icon to the Virus Alert icon, and your application will be protected against all known Archimedes viruses. Moreover, your application will be protected against future viruses, as the Virus Alert protection system is not virus specific.

Desktop Caret Flasher



If you undertake extensive text processing or program editing, you will appreciate this useful application which improves the visibility of the caret (the vertical text cursor). The program causes the caret to flash gently, irrespective of which application is currently displaying it, and you can turn the flashing on or off as required. You can also adjust the flash speed.

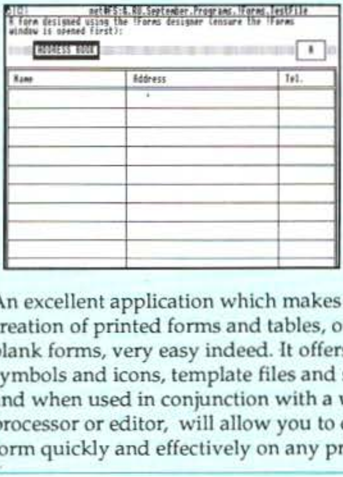
Worldwide Time Keeping



Check the time and the date anywhere in the world with this visual application. The program displays up to sixteen world-wide locations with the current time and date, and continues updating them on screen in real time. You can also create your own list of locations and choose between GMT and BST.

ADDITIONAL ITEMS REFERRED TO IN THE MAGAZINE

Form Designer



A form designed using the !Forms designer (ensure the !Forms window is opened first):

An excellent application which makes the creation of printed forms and tables, or any blank forms, very easy indeed. It offers useful symbols and icons, template files and sprites, and when used in conjunction with a word processor or editor, will allow you to create any form quickly and effectively on any printer

BONUS ITEMS

PCol Source Code

Produce neat and compact program listings with the latest version of our multi-column Basic lister, first published in RISC User Volume 3 Issue 5.

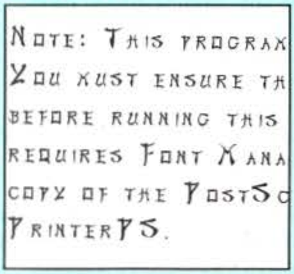
All of these powerful applications and

September 1991

Ion Camera Pict

A sample 'photograph' taken with Canon's Ion Camera, reviewed this month as part of Solitaire's Picture Kit. The photograph has been converted by the Picture Kit into a mode 15 sprite.

Font Read

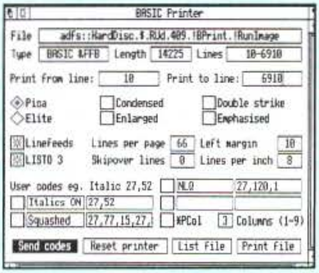


NOTE: THIS PROGRAM
YOU MUST ENSURE TH
BEFORE RUNNING THIS
REQUIRES FONT MANA
COPY OF THE POSTSC
PRINTERPS.

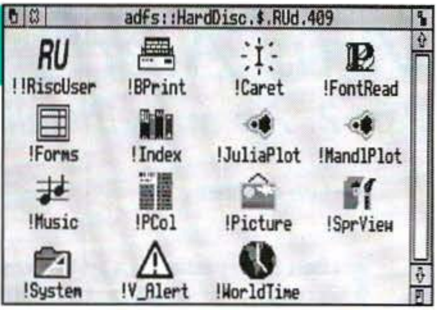
A most effective utility which produces downloadable PostScript font definitions for any outline font, greatly expanding the capabilities of PostScript printers for handling outline fonts.

BPrint

This application provides a wealth of facilities for printing Basic programs, and interacts with PCol, the multi-column printer utility also included on the disc.

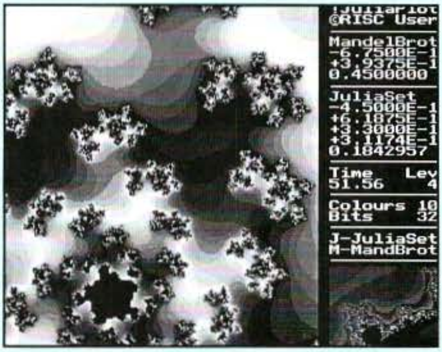


BASIC Printer
File adfs::HardDisc.$.RUd.409.!BPrint.!RunImage
Type BASIC &FFB Length 14225 Lines 10-6910
Print from line: 10 Print to line: 6910
● Pica ☐ Condensed ☐ Double strike
○ Elite ☐ Enlarged ☐ Emphasised
☒ LineFeeds Lines per page 66 Left margin 10
☒ LISTO 3 Skipover lines 0 Lines per inch 8
User codes eg. Italic 27,52 ☐ NLQ 27,120,1
☐ Italics ON 27,52 ☐
☐ Squashed 27,77,15,27, ☐ *PCol 3 Columns (1-9)



This month's disc menu

Mandelbrot and Julia Sets



```
!JuliaPlot
©RISC User
MandelBrot
-6.7500E-1
+3.9375E-1
0.4500000
JuliaSet
-4.5000E-1
+6.1875E-1
+3.3000E-1
+3.1174E-1
0.1842957
Time   Lev
51.56    4
Colours 10
Bits    32
J-JuliaSet
M-MandBrot
```

Two programs offering fascinating visual displays. The first one is an updated version of the previously published Mandelbrot program with improved 32 bit multiply and square routine.The second program is new and offers the opportunity to explore Julia sets in a equally slick and fast manner.

Maestro Tunes

Some new Maestro tunes: the favourite Bethoven's Moonlight sonata, Handel's sonata in G2 and an original piece, all of which you can play on your Arc.

ArcScan Data

The ArcScan files for this issue of RISC User and BEEBUG Vol.10 No.3.

election of bonus items for only £4.75

Virus Alert

Part 2: An auto-installer for the V_Alert Module

by Lee Calcraft

In Part 1, we presented a system which can warn you of virus activity in your computer, and halt a virus in its tracks before it has a chance to damage your data. Here, as promised, is a Desktop application which will automatically install the protection system into any application which is dragged to its icon.

CREATING THE APPLICATION

To build this application, you will need to create an application directory called !V_Alert - or similar. In fact, as suggested last month, you should attempt to disguise virus protection software to make it harder for virus writers to take counter measures. One way to do this is to use customised names for all associated files. You should therefore choose some other name than V_Alert for your application.

As usual the directory must contain a sprite file called !Sprites containing a 34 by 17 pixel sprite bearing the same name as the application itself; a !Boot and a !Run Obey file; and a !RunImage file. The !Boot and !Run files may be created using Edit (Use *Create* and *New Obey file* from Edit's icon bar menu), and they should contain the sequences of commands given in listing 1 and 2.

The !RunImage file is the Basic program given in listing 3. Finally you will need a text file containing your own customised names associated with the protection system. Listing 4 gives a guide to the contents of this file, which should be saved in the V_Alert application directory using the name *Custom* (if you customise this name, don't forget to alter the name "Custom" which appears near the end of the !RunImage program).

The first five names in the Custom file are the ones which you supplied when generating the module last month. The remaining four are lines which will be randomly added as a disguise (in addition to a random sprinkling of Carriage Returns) when the V_Alert installer is used. The first of these will be added to the !Boot file, the second to the !Run file, while the third and fourth will appear from time to time in the installer files. You should ensure that the text which you use will not cause errors to occur when the target files are executed. Any text following a vertical bar is acceptable for this purpose (since it is ignored by the operating system), or alternatively, to avoid consistency, you could use commands such as:

```
set XXX$var N
and unset XXX$Var
```

where XXX is a name of your choice (but not one normally used on your computer!).

When you have put it all together, double-click on the V_Alert icon in the directory viewer, and the icon should install itself on the icon bar. Clicking Menu over it should give a two-entry menu consisting of the usual *Info* and *Quit* options. If you drag any application directory icon to the V_Alert icon, it will install the protection system into that directory, and give a low pitched beep. If it discovers that the directory is already protected, it will give a high-pitched beep, and reset the corresponding Virus Alert data file on the basis of the current contents of the directory. If you drag a non-application icon to the V_Alert icon, you will get an error message to the effect that only applications may be dragged to V_Alert.

The Virus Alert Controller may now be used to install the protection system into all of your applications. As far as we can tell, it will give protection against all known Archimedes viruses. Moreover, because it is not virus-specific, it should give protection against the vast majority of viruses as yet unleashed. Remember though, that if it puts up a virus warning at any time (especially if the Tamper code is "N" on its own), it is far more likely that the changes which it has detected have been directly or indirectly instigated through legitimate use of the computer. To check this out, carefully examine the offending application directory in the light of the Tamper code given by Virus Alert.

If you positively identify a virus in your computer, you should report it to the Computer Crimes Unit tel. 071 230 1176/7 - see our article *Viruses and the Law* in the previous issue.

Site Licence

A customised version of Virus Alert, containing both the Virus Alert module and the Auto-Installer are available on site licence. For details, please contact the Publications Department.

Listing 1. V_Alert !Boot file.
Note that you should use your own name in place of ***V_Alert.***

```
Iconsprites <Obey$Dir>.!Sprites
Set V_Alert$Dir <Obey$Dir>
```

Listing 2. V_Alert !Run file.
Again, you should use your own name in place of V_Alert.

```
Obey <Obey$Dir>.!Boot
WimpSlot -min 16K -max 16K
Run <V_Alert$Dir>.!RunImage %*0
```

Listing 3

```
   10 REM > <V_Alert$Dir>.!RunImage
   20 REM >!V_alert-5
   30 REM Program   V_Alert Installer
   40 REM Version   A 0.50
   50 REM Author    Lee Calcraft
   60 REM RISC User September 1990
   70 REM Copyright Lee Calcraft
   80 REM           Not Public Domain
   90 :
  100 max_buff%=&1000
  110 DIM c_buff% max_buff%
  120 DIM block% &200,menu% &100
  130 t_len%=100:DIM title% t_len%
  140 quit%=FALSE:$block%="TASK"
  150 SYS "Wimp_Initialise",200,!block%,
"Virus Alert" TO version%,task%
  160 bar_icon%=FNicon(-1,0,0,68,68,&300
2,"!V_Alert",0,0,0)
  170 PROCcreateinfobox
  180 PROCdrawmenu(menu%,"Virus alert,In
fo,Quit")
  190 menu%!32=ibhandle%
  200 ON ERROR IF FNwimperror THEN END
  210 PROCread_custom
  220 OSCLI("RMensure "+module_name$+" 1
.0 ERROR 255 You must load the Virus Ale
rt module before proceeding")
  230 REPEAT:PROCpoll:UNTIL quit%
  240 SYS "Wimp_CloseDown"
  250 END
  260 :
  270 DEF PROCpoll
  280 SYS "Wimp_Poll",&1831,block% TO re
ason%
  290 CASE reason% OF
  300 WHEN 1:PROCredraw
  310 WHEN 2:SYS "Wimp_OpenWindow",,bloc
k%
  320 WHEN 3:SYS "Wimp_CloseWindow",,blo
ck%
  330 WHEN 6:PROCbuttons
  340 WHEN 9:PROCmenuselect
  350 WHEN 17,18:PROCreceive
  360 ENDCASE
  370 ENDPROC
  380 :
  390 DEF FNcreate(vwx%,vwy%,vww%,vwh%,e
xtx%,exty%,flags%,title%,t_len%,title$)
  400 $block%=STRING$(88,CHR$0)
  410 block%!0=vwx%:block%!4=vwy%
  420 block%!8=vwx%+vww%
  430 block%!12=vwy%+vwh%
  440 block%!24=-1:block%!28=flags%
  450 block%?32=7:block%?33=2
  460 block%?34=7:block%?35=1
  470 block%?36=3:block%?37=1
  480 block%?38=12:block%!40=0
  490 block%!44=-vwh%-exty%
  500 block%!48=vww%+extx%
  510 block%!52=0:block%!56=&13D
  520 block%!60=3<<12:block%!72=title%
  530 block%!76=-1:block%!80=t_len%
  540 $title%=title$
  550 SYS "Wimp_CreateWindow",,block% TO
 handle%
  560 =handle%
  570 :
  580 DEF PROCredraw
  590 handle%=!block%
  600 SYS "Wimp_RedrawWindow",,block% TO
 more%
  610 PROCgetorigin(block%,x0%,y0%)
  620 WHILE more%
  630 PROCdraw(x0%,y0%)
  640 SYS "Wimp_GetRectangle",,block% TO
 more%
  650 ENDWHILE
  660 ENDPROC
  670 :
  680 DEF PROCgetorigin(block%,RETURN x0
%,RETURN y0%)
  690 x0%=block%!4-block%!20
  700 y0%=block%!16-block%!24
  710 ENDPROC
  720 :
  730 DEF PROCclose
  740 $block%="TASK"
  750 SYS "Wimp_CloseDown",task%,!block%
  760 ENDPROC
  770 :
  780 DEF FNicon(whandle%,ix%,iy%,iw%,ih
%,flag%,text$,d1%,d2%,d3%)
  790 block%!0=whandle%
  800 block%!4=ix%:block%!8=iy%
  810 block%!12=ix%+iw%:block%!16=iy%+ih
%
  820 block%!20=flag%
  830 IF d1%=0 THEN
  840 $(block%+24)=text$
  850 ELSE
  860 block%!24=d1%:block%!28=d2%
  870 block%!32=d3%
  880 ENDIF
  890 SYS "Wimp_CreateIcon",,block% TO i
handle%
  900 =ihandle%
```

```
  910 :
  920 DEF PROCopenwindow(handle%)
  930 block%!0=handle%
  940 SYS "Wimp_GetWindowState",,block%
  950 SYS "Wimp_OpenWindow",,block%
  960 ENDPROC
  970 :
  980 DEF PROCbuttons
  990 x%=!block%:y%=block%!4
 1000 IF block%!12=-2 AND (block%!8 AND
2) THEN PROCshowmenu(menu%,x%,y%,TRUE,en
tries%)
 1010 ENDPROC
 1020 :
 1030 DEF PROCdrawmenu(menu%,menu$)
 1040 menu%?12=7:menu%?13=2
 1050 menu%?14=7:menu%?15=0
 1060 menu%!16=140:menu%!20=44
 1070 menu%!24=0:ptr%=menu%+28
 1080 $menu%=LEFT$(menu$,INSTR(menu$,","
)-1)
 1090 menu$+=",":entries%=0
 1100 WHILE menu$<>""
 1110 menu$=MID$(menu$,INSTR(menu$,",")+
1)
 1120 IF menu$<>"" THEN
 1130 !ptr%=0:ptr%!4=-1
 1140 ptr%!8=&7000021
 1150 $(ptr%+12)=LEFT$(menu$,INSTR(menu$
,",")-1)
 1160 ptr%+=24:entries%+=1
 1170 ENDIF
 1180 ENDWHILE
 1190 ptr%!-24=ptr%!-24 OR &80
 1200 ENDPROC
 1210 :
 1220 DEF PROCshowmenu(menu%,x%,y%,onico
nbar%,entries%)
 1230 IF oniconbar% THEN ypos%=96+entrie
s%*44 ELSE ypos%=y%+20
 1240 SYS "Wimp_CreateMenu",,menu%,x%-64
,ypos%
 1250 ENDPROC
 1260 :
 1270 DEF PROCmenuselect
 1280 choice%=!block%
 1290 REM choice2%=block%!4
 1300 IF choice%=1 THEN quit%=TRUE
 1310 IF NOT quit% THEN
 1320 SYS "Wimp_GetPointerInfo",,block%
 1330 IF block%!8=1 THEN PROCshowmenu(me
nu%,x%,y%,TRUE,3)
 1340 ENDIF
 1350 ENDPROC
 1360 :
 1370 DEF PROCcreateinfobox
 1380 DIM ibicon%(3), iconindirect% &80
 1390 ibhandle%=FNcreate(0,0,636,216,0,0
,&84000002,title%,t_len%,"About this pro
gram")
 1400 FOR i%=0 TO 3
 1410 READ text$
 1420 $(iconindirect%+i%*&20)=text$
 1430 ibicon%(i%)=FNicon(ibhandle%,154,-
(i%+1)*52,476,48,&70001BD,"",iconindirec
t%+i%*&20,-1,&20)
 1440 NEXT
 1450 ENDPROC
 1460 DATA V_Alert,Virus Alert Installer
,Lee Calcraft,0.50 (June 28 1991)
 1470 :
 1480 DEF PROCdraw(x0%,y0%)
 1490 MOVE x0%,y0%-16
 1500 PRINT"    Name:"
 1510 MOVE x0%,y0%-68
 1520 PRINT" Purpose:"
 1530 MOVE x0%,y0%-120
 1540 PRINT"  Author:"
 1550 MOVE x0%,y0%-172
 1560 PRINT" Version:"
 1570 ENDPROC
 1580 :
 1590 DEF PROCreceive
 1600 CASE block%!16 OF
 1610 WHEN 0:quit%=TRUE
 1620 WHEN 3:PROCloadack:PROCdrag_to_us
 1630 ENDCASE:ENDPROC
 1640 :
 1650 DEF PROCdrag_to_us
 1660 a%=44
 1670 app_name$=""
 1680 REPEAT
 1690 b%=block%?a%
 1700 IF b%>31 app_name$+=CHR$b%
 1710 a%+=1
 1720 UNTIL b%=0
 1730 IF block%!40<>&2000 THEN ERROR 255
,"Applications directories only please!"
 1740 PROCimplant(app_name$)
 1750 ENDPROC
```

```
 1760 :
 1770 DEF PROCloadack
 1780 block%!12=block%!8:block%!16=4
 1790 SYS "Wimp_SendMessage",17,block%,b
lock%!4
 1800 ENDPROC
 1810 :
 1820 DEF PROCimplant(name$)
 1830 REM Implant the system into named
 1840 REM directory - or if already pres
ent
 1850 REM update the datafile
 1860 OSCLI("Set Obey$Dir "+name$)
 1870 i%=OPENIN(name$+"."+f_data$)
 1880 CLOSE #i%
 1890 IF i% THEN
 1900 OSCLI(c_install$)
 1910 SOUND 1,-15,200,2
 1920 ELSE
 1930 PROCdo_boot:PROCdo_run
 1940 PROCdo_install
 1950 OSCLI(c_install$)
 1960 OSCLI(c_install$):SOUND 1,-15,70,2
 1970 ENDIF
 1980 ENDPROC
 1990 :
 2000 DEF FNboot_called
 2010 REM does !Run call !Boot ?
 2020 found%=FALSE: n%=-1
 2030 REPEAT
 2040 n%+=1
 2050 IF c_buff%?n%=ASC"!" THEN
 2060 IF c_buff%?(n%-1)=ASC"." AND (c_bu
ff%!(n%+1) AND &DFDFDFDF)=&544F4F42 AND
(c_buff%?(n%+5)=10 OR c_buff%?(n%+5)=32)
 THEN found%=TRUE
 2070 ENDIF
 2080 UNTIL found% OR (n%>l%-4)
 2090 =found%
 2100 :
 2110 DEF PROCdo_run
 2120 REM Alter !run file
 2130 l%=0
 2140 IF FNrnd_bool PROCadd_line("")
 2150 IF FNrnd_bool PROCadd_line(run_gui
se$)
 2160 PROCadd_line(c_check$)
 2170 fname$=name$+".!Run"
 2180 b%=OPENIN(fname$)
```

Continued on page 61

42M Removable Drives – £499 + VAT

If you are looking for a hard drive for your Archimedes or A3000, why not consider using a MicroNet MR45 removable hard drive ?…

- **Fast** – The average access time is 20 milliseconds, so these are FAST devices. When used with an Oak SCSI card, the file transfer rate is the same as a standard 45M hard drive.
- **Reliable** – The technology of these drives has been proven by use in huge quantities on the Apple Macintosh computers.
- **Robust** – The discs, when not in the drive, are extremely robust. We (deliberately!) threw one half-way across the office, it dropped on the floor and rolled over a couple of times. We then verified it and found that it did not have a single error on it!
- **Flexible** – The medium is removable, so you can use different discs for different areas of work, each with its own boot file – one for DTP, one for games etc.
- **Physically secure** – The medium is removable, so you can take out the disc and lock it up in a safe place.
- **Secure data** – The discs can be write protected, like floppy discs, to protect the data.
- **Cheap** – The price of the drive, including a single 42M disc, is just £499. (£590 inc VAT & carriage) Extra 42M discs are £75 each inc VAT. (SCSI podules are available from £170.)

Public Domain Software

Norwich Computer Services has a range of over 50 discs of Archimedes public domain software from various sources. Many of the discs contain several quite substantial applications for as little as £3.50 per disc. Some of the more popular applications are…

- **!PCDir** – A desktop utility that allows the transfer of files between MS-DOS discs and Archimedes discs. (One of many programs on Careware Nº7 – £7. The aim of Careware discs is to raise money for charity. For each disc, £6 is sent direct to charity.)
- **!Translator** – This application allows you to translate between various image file formats – sprite, GIF, TIFF. (Careware Nº13, £7.00, which also has other graphics applications.)
- **!Draw+** is an updated version of !Draw with many extra features including keyboard short-cuts. (Also on Careware Nº 13, £7.00.)
- **Keystrip printer** – Creates !Draw keystrip from an !Edit file of the text. (Shareware Nº32, £3.50 – also has a lot of other DTP stuff on it.)
- **Golf** – an excellent implementation with full sound & graphics. (Shareware Nº41, £3.50)
- **DOS filing system and DFS reader/writer** – These are available on Shareware Nº31, £3.50, which also has a 'C' editor and various other utilities.

Ring, write or fax us if you want a full list of our PD software.

Norwich Computer Services

96a Vauxhall Street, Norwich NR2 2SD. (0603–766592 / Fax 764011)

Into the Arc

Under the Desktop

by Mike Williams

The RISC OS Desktop environment, using the mouse to point and select from windows, is both a powerful and highly convenient method by which the user can communicate with his Archimedes. And the adoption of a standard approach for Desktop applications, through the implementation of Acorn's guidelines serves only to reinforce the basic principles of Desktop operation.

However, the Desktop is not the only way to control your system, and in this article, by delving beneath the Desktop, I want to show how an even wider range of functions is readily accessible to all users. So, if you have never deliberately ventured away from the Desktop, or you want to learn more, read on.

First of all we need to know how to exit from the Desktop. There are several ways of doing this, but the simplest and overall most convenient is just to press function key F12. The Desktop display will scroll up by one line, and the so-called *command line* prompt, an asterisk, will appear. The beauty of this approach is that by and large, pressing Return at any time will take you back to the Desktop environment just as it was when you left it. Thus the use of F12 is an ideal way to leave the Desktop, perform some short operation, and then return.

So having learnt how to leave and return to the Desktop at will, what can we do? "Plenty" is the answer - in fact you will find that a substantial part of the User Guide (Part 3) is devoted to star commands, that is commands prefixed by an asterisk which are interpreted by the Command Line Interpreter (CLI). Provided the asterisk prompt is present there is no need to include a further asterisk as part of the command you type in, though if you do (out of force of habit maybe) it will not make any difference.

It is also worth pointing out another less obvious context for star commands, and that is within the !Boot and particularly !Run Obey files which appear in most application directories. Obey files consist essentially of a list of star commands (omitting the unnecessary asterisk in each case), which are presented in sequence to the CLI. Thus all the commands described here can be and are used as needed in Obey files, and dragging any examples of these files into Edit will let you examine their contents to see further how star commands can be used. Obey files automatically execute a sequence of commands which would otherwise have to be typed in manually each time. One further point at this stage - star commands can be entered in any mixture of upper and lower case characters.

INVOKING BASIC

Leaving the Desktop is of course the way to get at Basic. Once the prompt appears enter:

`*Basic` (or just *Ba.)

and Basic will announce itself, and put up its own '>' prompt. This is the route to take when typing in listings of Basic programs published in RISC User (though you may prefer to use Basic Edit as described last month). Most of the commands to be described here can also be used within Basic, but it is essential that the initial asterisk is then included so that Basic is aware that the command should be passed to the CLI. Commands for selecting directories, cataloguing directories etc. are just as vital for Basic users. And to quit Basic you need *Quit. This will return you to the CLI prompt. Pressing Return as explained before will then restore the Desktop.

Before we move, on it is also worth pointing out that some star commands can also be followed by additional parameters, and this is true for *Basic. Thus:

```
*Basic -load Fred
```

will not only enter Basic, but will also attempt to load the file called 'Fred' into Basic. Any name could be given. Alternatively:

```
*Basic -chain Fred
```

will activate Basic and attempt to chain (run) a file (program) called Fred. A similar call is:

```
*Basic -quit Fred
```

which does just the same, but when the named program stops running, Basic quits returning automatically to the CLI prompt. Other variants of *Basic are described in the User Guide.

The User Guide groups star commands in a reasonably logical way. Many are related to filing system operations, but we'll make a start by having a look at some of the star commands which the User Guide puts in the 'Miscellaneous' category. We'll pick out some of the more useful.

FONT INFORMATION

Once you start acquiring libraries of outline fonts you may decide to group them in more than one Font application (see Hints and Tips both last month and again in this issue). In these circumstances it can be useful to find out what fonts you have installed in your machine. Thus:

```
*FontCat
```

will list all fonts currently known to the system. Note that to the Font Manager, variants such as *Light*, *Medium*, *Standard*, etc. are classified as different 'fonts'. The related command:

```
*FontList
```

will list which fonts are occupying the font cache (if allocated - 64K is a useful working minimum on a 1MByte machine, but more if possible).

PRINTER IGNORE CHARACTER

Some printers (not many these days) automatically generate a linefeed character when a carriage return is sent. Thus if the computer sends the sequence:

```
linefeed/carriage return
```

such printers will execute two linefeeds, and then the carriage return. To prevent this unwanted double-line spacing:

```
*Ignore 10
```

could be used to specify that the computer should not send a linefeed (ASCII 10) when it occurs, but to ignore it, thus achieving correct printout.

Most printers can be set into this mode of operation by setting the DIP switches according to the manual, but it is highly preferable that a printer should not itself generate any linefeeds, but to print no more or less than is sent by the computer. This can be achieved, if desired, by specifying:

```
*Ignore
```

with no parameter (which is the default state anyway). Don't use the format:

```
*Ignore 0
```

as this can sometimes affect graphics printing by not sending any zero bytes.

ALTERNATIVE LANGUAGES

No, we are not talking about alternatives to Basic (or any other computer language), but the commands which exist to configure your Archimedes to operate with foreign character sets. However, not only do other countries use characters which are non-English, the frequency of use of the different characters has resulted in different keyboard layouts. For example, German keyboard layouts swap the 'Y' and 'Z' key functions. To try this out, enter:

```
*Country Germany
```

To restore the normal keyboard layout you will need to type:

```
*Country UK
```

but remember that to get the 'y' of 'Country' you will now need to press 'z', all very confusing. To see the full list of country options use the command:

```
*Countries
```

The Archimedes currently provides six alphabets, Bfont for compatibility with the older BBC Master 128, *Latin1* which is the default, *Latin2*, *Latin3*, *Latin4* and *Greek*. These character sets are detailed at the back of the User Guide. Choosing a different alphabet determines what is displayed on screen corresponding to each ASCII character code. But you should realise that when information is printed, its appearance depends on the alphabet used by the printer - it may or may not be the same. Virtually all printers provide Latin1, which covers the needs of most western European languages.

Of the various commands available, *Keyboard sets a national keyboard layout, *Alphabet selects one of the available alphabets, while *Country selects the correct combination of both keyboard layout and alphabet for a given country. For more insight into this area I refer you to the two articles under the heading *Going International* published in RISC User Volume 4 Issues 7 & 8.

SAVING AND LOADING SCREENS

The simplest way of saving a screen display is with the *Screensave command (specifying a file name to use, preferably the full pathname), though if this is issued from the command line then that line will be part of the screen display saved. For this reason it is perhaps better used from within a Basic program. The saved screen is in the form of a sprite file which can be loaded into Paint (and many other applications) and printed as required. The corresponding command *Screenload <filename> can be used to redisplay a saved screen.

MISCELLANEOUS

Finally, for now at least, two genuinely miscellaneous commands. *Time will give you a quick display of the current date and time. *TV is quite different and can be used to adjust the vertical position of the display on your monitor. Use the format:

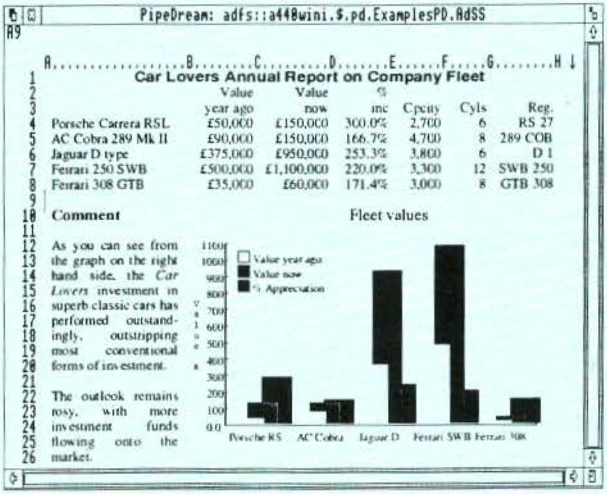
```
*TV n,1
```

where 'n' is progressively 0, 1, 2, or 3 to move the picture up, and 255, 254, 253 or 252 to move the picture down. If you find a particular setting preferable, then configure your system to power up with this (using the *Configure command which we'll deal with on another occasion).

A Desktop Caret Flasher (continued from page 15)

```
  980    WHEN 3:space%=60
  990    WHEN 4:space%=30
 1000    WHEN 5:space%=15
 1010    WHEN 6:
 1020      paused%=NOT paused%
 1030      PROCtick(6,paused%)
 1040      IF paused% AND on% THEN
 1050        on%=FALSE
 1060        cflag%=cflag% AND &FDFFFFFF
 1070        SYS "Wimp_SetCaretPosition",
cb%!0,cb%!4,cb%!8,cb%!12,cflag%,cb%!20
 1080      ENDIF
 1090    WHEN 7:quit%=TRUE
 1100 ENDCASE
 1110 IF choice% <3 THEN
 1120    PROCtick(choice%,TRUE)
 1130    PROCtick(mark_tick%,FALSE)
 1140    mark_tick%=choice%
 1150 ELSE
 1160    IF choice%<6 THEN
 1170      PROCtick(choice%,TRUE)
 1180      PROCtick(space_tick%,FALSE)
 1190      space_tick%=choice%
 1200    ENDIF
 1210 ENDIF
 1220 IF NOT quit% THEN
 1230    SYS "Wimp_GetPointerInfo",,blk%
 1240    IF blk%!8=1 THEN PROCshowmenu(me
nu%,x%,y%,TRUE,3)
 1250 ENDIF
 1260 ENDPROC
 1270 :
 1280 DEF FNicon(whandle%,ix%,iy%,iw%,ih
%,flag%,text$)
 1290 blk%!0=whandle%
 1300 blk%!4=ix%:blk%!8=iy%
 1310 blk%!12=ix%+iw%
 1320 blk%!16=iy%+ih%
 1330 blk%!20=flag%
 1340 $(blk%+24)=text$
 1350 SYS "Wimp_CreateIcon",,blk% TO iha
ndle%
 1360 =ihandle%
 1370 :
 1380 DEF FNwimperror
 1390 !blk%=ERR
 1400 $(blk%+4)=REPORT$+" (internal erro
r code "+STR$ERL+")"+CHR$0
 1410 SYS "Wimp_ReportError",blk%,3,"Car
et flash" TO ,response%
 1420 IF response%=2 THEN SYS "Wimp_Clos
eDown":=TRUE ELSE =FALSE
```

PIPEDREAM 3



PipeDream: adfs::a448wini.$.pd.ExamplesPD.AdSS

A9

Car Lovers Annual Report on Company Fleet

	Value year ago	Value now	% inc	Cpcity	Cyls	Reg.
Porsche Carrera RSL	£50,000	£150,000	300.0%	2,700	6	RS 27
AC Cobra 289 Mk II	£90,000	£150,000	166.7%	4,700	8	289 COB
Jaguar D type	£375,000	£950,000	253.3%	3,800	6	D 1
Ferrari 250 SWB	£500,000	£1,100,000	220.0%	3,300	12	SWB 250
Ferrari 308 GTB	£35,000	£60,000	171.4%	3,000	8	GTB 308

Comment

As you can see from the graph on the right hand side, the *Car Lovers* investment in superb classic cars has performed outstandingly, outstripping most conventional forms of investment.

The outlook remains rosy, with more investment funds flowing onto the market.

PipeDream 3 breaks down the barriers between word processor, spreadsheet and database. You can include numerical tables in your letters and reports, add paragraphs to your spreadsheets, and perform calculations within your databases.

Based on PipeDream 2, the best-selling integrated package for the Archimedes, PipeDream 3 has been completely re-written to take full advantage of RISC OS - if you can use RISC OS, you can use PipeDream 3. It is fully multi-tasking and multi-windowing, so you can work on many documents at once and instantly move information between them. And since PipeDream 3 can automatically load and save most popular file formats, including VIEW and First Word Plus, switching to it from other programs has never been easier.

Power, flexibility, speed, ease of use. PipeDream 3. Breaking down the barriers.

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PipeDream 3 is for all Archimedes computers with RISC OS and 1Mbyte of RAM.

PipeDream 3 costs £147.00 +VAT.

Major features include:

- many documents loaded at once
- intuitive RISC OS user interface
- displaying and printing of pictures within text
- built-in 93,003 word spelling checker
- file compatibility with PC & Z88 PipeDream and BBC View Professional
- background recalculation
- keystroke compatibility with Z88 & PC PipeDream
- Z88 filing system
- automatic loading of VIEW, ViewSheet, Lotus, First Word Plus, Tab and CSV files
- automatic saving of VIEW, Lotus, Acorn DTP format, Tab and CSV files
- multi-field sorting
- use of all available fonts
- 62 spreadsheet functions
- external references for 3-D modelling
- macro file recorder
- slot protection

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PipeDream 3 ☐ View Professional ☐
Name ____________________
Address ____________________
____
____
____________________ Post code ____________________

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Swanns Road, Cambridge, CB5 8LA, England.
Fax: 0223 312010 Tel: 0223 311881

All trademarks acknowledged. The chart in the screen shown above was produced by sending numbers from PipeDream 3 to Lingenuity's Presenter 2 and then loading the resulting graph back into PipeDream 3.

Colton Software, 2 Signet Court, Swanns Road, Cambridge, CB5 8LA, England.
Fax. 0223 312010 Tel. 0223 311881

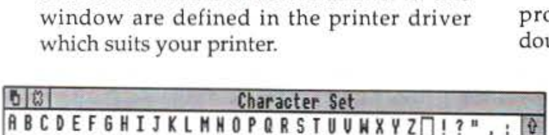
WP/DTP

Better Organised Word Processing

Keith Powell offers some advice on using 1st Word Plus, and some general hints on better ways of organising disc files for word processing.

UNDEFINED CHARACTERS

Both releases 1 and 2 of 1st Word Plus (1WP) provide a *Character Set* window. This allows you to enter characters into your document by clicking over the characters shown. However, an advantage of release 1 was that characters which did not have a code entered in the printer driver did not appear in the window. With release 2, you may find it frustrating not knowing which of the accented characters shown in this window are defined in the printer driver which suits your printer.



Character set as shown by 1stChars

The solution is to 'blank out' unused characters from the Archimedes system character set. To accomplish this, use VDU23 commands in a simple Basic program. If your printer cannot print a Registered Trade Mark symbol, '®', you can arrange that this character appears as a black rectangle in the Character Set window.

You need to know the decimal code for the character you wish to blank out. This can be determined from the Character Code appendix of your computer's User Guide. Find the character you want in the Latin 1 table, then add the number to the left of its row to the number above its column.

For example, the decimal code for the '®' is 174. The following one-line Basic program will change the character 174 so that it appears as a black rectangle:

```
10 VDU23,174,255,255,255,255,255,255,
255,255
```

By adding more lines which are identical, apart from the line number and the character number, you can build up a program which when run will black out all of the characters you cannot print, and this program can be run at any time by just double-clicking on its icon.

If you prefer the characters to be white (blank) instead of black, use the even simpler:

```
10 VDU23,174
```

You can also redefine the appearance of those characters you use to perform special functions for you within 1WP. The following line will draw a white cross with a black background in place of character 174:

```
10 VDU23,174,255,189,219,231,231,219,
189,255
```

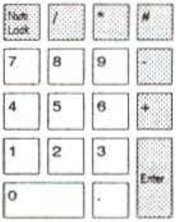
Should you want to revert to the original definitions of the characters, press F12 to leave the Desktop and type:

```
Alphabet Latin1
```

followed by an extra Return to return to the Desktop.

NON-KEYBOARD CHARACTERS

The standard way to enter a character into a document which does not appear on the keyboard is to click on the character in the Character Set window. An alternative way of entering these special characters into your document is to hold down the Alt key while you type the decimal code of the character using the numeric keypad, which is the group of keys to the right of your keyboard (you cannot use the row of number keys beneath the function keys for this purpose).

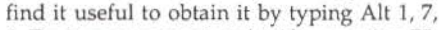


The character 'é' has a decimal code of 233. If you hold down the Alt key and press in sequence 2, 3 then 3 on the keypad, and then release the Alt key, a 'é' will appear on the screen - and it will be printed if your printer driver and printer can handle this character. If you use the degree sign a lot, which has a decimal code of 176, you may find it useful to obtain it by typing Alt 1, 7, 6. Typing a superscripted 'o' by pressing F5, o and F5 in succession is even quicker, but may not provide such an attractive symbol as the one specifically designed as a degree sign.

FIXED SPACES

You can add a fixed space by pressing F10, then clicking over the appropriate box in the Character Set window, finally using Alt 160.

Yet another way is to press the space bar while you are holding down the Alt key - the method preferred by touch-typists.

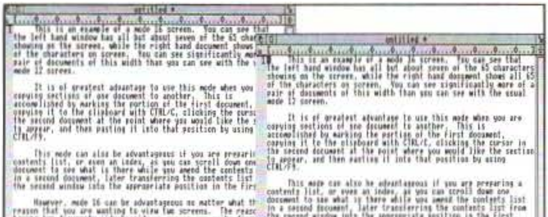


The two illustrations of the keyboard are based on Computer Concepts' drawing of the keyboard supplied with Impression II.

MODES

Release 1 of 1WP only allows the use of mode 12. If you have issue 2 of 1WP, you can use other modes. If you are working with two documents on screen, try using mode 16. This mode allows you to have about 65% more characters across the width of the screen than you have with mode 12. The characters are narrower although quite readable. If you are copying a marked portion of one document to the clipboard with Ctrl-C, and then pasting this into a second document, you will find it convenient to have the full width of one of the documents visible on the right, and as much as possible of the other document (about two-thirds) on the left.

If you have 'mode designer' software (see, for example, RISC User Volume 3 Issue 4), you may be able to design a mode which allows 148x36 characters on screen. These characters are very slim, but you quickly get used to that, and the benefits when working with two documents can be quite significant. With such modes, you may have to use *TV 255 or *TV1 (or similar) to suit your monitor. These star commands adjust the the vertical position of the screen display.



```
    This is an example of a mode 16 screen.  You can see that
the left hand window has all but about seven of the 65 char
showing on the screen, while the right hand document shows
of the characters on screen.  You can see significantly mor
pair of documents of this width than you can see with the
mode 12 screen.

    It is of greatest advantage to use this mode when you
copying sections of one document to another.  This is
accomplished by marking the portion of the first document,
copying it to the clipboard with CTRL/C, clicking the curs
the second document at the point where you would like the
to appear, and then pasting it into that position by using
CTRL/F9.

    This mode can also be advantageous if you are preparin
contents list, or even an index, as you can scroll down one
document to see what is there while you amend the contents
in a second document, later transferring the contents list
the second window into the appropriate position in the Firs

    However, mode 16 can be advantageous no matter what th
reason that you are wanting to view two screens.  The reaso
having two documents side-by-side on screen are quite diver
You may want to look at an earlier letter while you type a
one, or you may have typed notes for use when preparing a
document.
```

```
    This is an example of a mode 16 screen.  You can see that
the left hand window has all but about seven of the 65 characters
showing on the screen, while the right hand document shows all 65
of the characters on screen.  You can see significantly more of a
pair of documents of this width than you can see with the usual
mode 12 screen.

    It is of greatest advantage to use this mode when you are
copying sections of one document to another.  This is
accomplished by marking the portion of the first document,
copying it to the clipboard with CTRL/C, clicking the cursor in
the second document at the point where you would like the section
to appear, and then pasting it into that position by using
CTRL/F9.

    This mode can also be advantageous if you are preparing a
contents list, or even an index, as you can scroll down one
document to see what is there while you amend the contents list
in a second document, later transferring the contents list from
the second window into the appropriate position in the First.

    However, mode 16 can be advantageous no matter what the
reason that you are wanting to view two screens.  The reasons for
having two documents side-by-side on screen are quite diverse.
```

Dual document display in mode 66

If you have Impression, you will be able to use screen mode 66 which is supplied with this application. This gives a screen which is significantly wider than that given by mode 12, has a depth of four more lines, and the characters are exactly the same size as on a mode 12 screen. Of course, a multi-sync monitor allows even more modes, which can show much more of a document on the screen with the same definition that you obtain with mode 12.

A SECOND DIRECTORY

Release 2 of 1WP places no constraints on where files are kept on a disc. You will probably find that you can save well over a hundred letters on an 800K floppy.

These will not all go into the root directory. As you add more and more letters to the disc, this directory eventually becomes full. If you do not notice this until you are unable to save your 78th letter, you will then find that you cannot create another directory on the disc for your letter because the root directory is full! Before you can save your latest letter you have to copy one of the earlier ones temporarily to another disc, or a RAM disc, delete this file from the root directory, create the new directory and move the temporarily saved file into it.

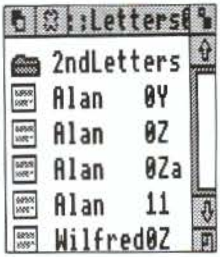
To avoid having to go through this procedure, create a second directory (called *2ndletters* say) well before the root directory is filled. By calling it 2ndletters, this name usually appears as the first item in the root directory viewer because the other files will generally start with a letter. Now, When the root directory becomes full, you can immediately open the 2ndletters directory viewer and save into it the letter you are working on. At that stage, prepare your next letters disc ready for when your current disc is full.

FILE NAMES

If you write a lot of letters, you may be interested in the following technique for naming the files on a disc or in a directory holding only letters. Save the files with the name of the person to whom you are sending the letter followed by a figure 1, which is short for 1991, followed in turn with the number of the month. Use X, Y and Z for the last three months of the year. If you send a second letter to someone during a month, add b, etc. Thus the second letter you sent to Richard in January 1991 would be called:

`Richard11b`

All letters to one person on one disc then appear in date order. Of course, you must limit the number of letters for each person's name to 7 or less if you use this technique.

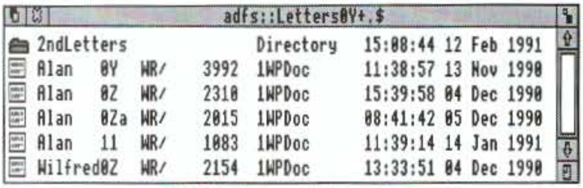


```
2ndLetters
Alan   0Y
Alan   0Z
Alan   0Za
Alan   11
Wilfred0Z
```

If the name is less than 7 letters, you can pad this out to 7 characters by using fixed spaces. These can be entered by holding down Alt and pressing the space bar. Thus, Smith would have two fixed spaces between the name and the remaining characters:

`Smith 11c`

This way, the date numbers align in your directory viewer, an advantage best observed if you resize this window to be only one column wide.



```
2ndLetters                 Directory   15:08:44 12 Feb 1991
Alan   0Y   WR/    3992   1WPDoc      11:38:57 13 Nov 1990
Alan   0Z   WR/    2310   1WPDoc      15:39:58 04 Dec 1990
Alan   0Za  WR/    2015   1WPDoc      08:41:42 05 Dec 1990
Alan   11   WR/    1083   1WPDoc      11:39:14 14 Jan 1991
Wilfred0Z   WR/    2154   1WPDoc      13:33:51 04 Dec 1990
```

Full file time and date display

FILE DATES

If someone writes to you pointing out that you put the wrong date on your letter and asking when you really did send it, you can find out when you last saved it by displaying the disc viewer showing the saved file, clicking Menu when the pointer is over this viewer, sliding across from *Display* and clicking on *Full Information*. The information displayed against each file name includes the time and date when it was last saved. RU

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The 80 Column

Alan Wrigley presents a round-up of the latest news and hints relating to printers and printing.

NEWS

Calligraph, the company which produces the ArcLaser, has some interesting new products. The *Econet Printer Spooler* allows you to use an ArcLaser as a networked printer, and requires a 2 Mbyte Archimedes to act as a printer server. Calligraph claims that the software is so efficient that printing over a network often takes little longer than printing directly to an ArcLaser. The price of the spooler is £69 (educational price). Calligraph is also now supplying a heavy-duty version of ArcLaser, called *ArcServer*. Based on a Taxan 8-page-per-minute print engine, this is designed for use in computer rooms and the like, where robustness is essential. The educational price of the ArcServer, which includes the printer spooler software, is £989.

PrinterAL, the printer driver supplied with the ArcLaser, has also undergone many improvements since we reviewed the product in Volume 4 Issue 1. Of particular interest is a facility to select a fine mesh setting for halftone areas. Normally, halftones on a 300 dpi laser printer can look very "dotty". Selecting a finer mesh greatly improves the appearance of some halftone areas and the readability of text which overlays such areas, giving a result which approaches that obtainable with a 600 dpi printer.

HINTS

We have received a few hints relating to printers in response to our request a few months back. J.M. Mellard has provided a tip for printing to a file from 1st Word Plus. This is a useful feature of the printer drivers, but the option is not available from the 1WP keypad. Normally it is possible to print to a file by issuing a *FX5,5 command, having set *Printer$Type5* as described in *Hints & Tips* Volume 4 Issue 4. Unfortunately 1WP overrides this and sends output to the printer instead. However, by "borrowing" the network printer port, you can use *Printer$Type4* to hold the name of the file, and select *Network port* on the keypad. 1WP will now send the output to the file. Don't forget to alter *Printer$Type4* back again if you use a network.

We also have a very useful hint for PostScript users. When a file is sent to a PostScript printer using *PrinterPS*, the printer driver first sends two additional files, called *PSProlog* and *PSProlog2*. These are kept in the !PrinterPS application directory, and contain various pieces of information required by the printer, such as font name translations and character encoding. Because these files are sent before every print job, there is obviously a slight increase in the time taken.

However, it is possible to download the prologue files when the printer is first switched on, and they will remain resident in the printer's memory and will not need to be sent with each job. To do this, create a new text file, called *PSSetUp*, containing the following line:

```
serverdict begin 0 exitserver
```

followed by the contents of PSProlog and PSProlog2. You could also at this stage add further font definitions to the end of PSSetUp, using our *FontRead* application from this month's magazine disc. Now install PrinterPS and drag PSSetUp to its icon bar icon. The prologue definitions and any other font definitions will now be resident in the printer.

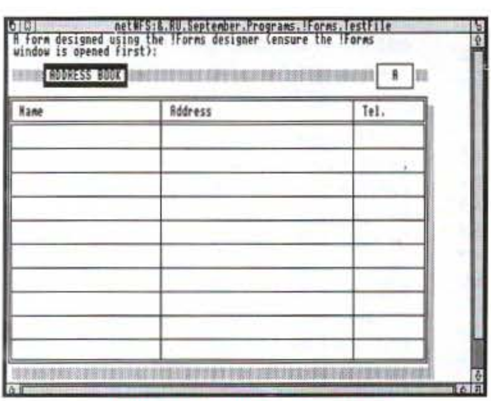
Because PrinterPS still expects to find the two prologue files whenever it processes a print job, you must replace the existing files with blank ones. Keep the originals somewhere safe, and simply create two new empty text files called *PSProlog* and *PSProlog2*, making sure they are stored in the !PrinterPS directory in place of the originals. RU

Form Designer

by Kell Gatherer

This application is supplied only on this month's magazine disc.

This excellent and highly practical application, when used in conjunction with a word processor or editor, makes the creation of printed forms and similar layouts very easy indeed. It is very effective if you want to produce tables and similar results with all the line work included, but if anything it is even more effective for creating blank and outline forms (see figure 1). It is not suitable for use with outline fonts unless such a font is also designed around the IBM character set, but it will work well even with Edit.



A form designed using the !Forms designer (ensure the !Forms window is opened first):

ADDRESS BOOK A

Name	Address	Tel.

Figure 1. Sample form design

It is based on the fact that most printers have an IBM setting, which includes a set of graphics characters for the design of forms. The *Forms* application as supplied loads an alternative screen font for the Archimedes which shows the graphics font on-screen as it will appear on a suitable printer. A window is then opened displaying icons for each of the necessary symbols, usefully arranged for quick form design (see figure 2). Also included are other useful symbols, and icons for the cursor keys, and the Delete, Insert and Return keys. The symbols can be inserted in your document at the caret position by clicking the Select button over the desired symbol. Note that the '£' symbol must be selected from the application window, as the keyboard '£' now represents a different character as a result of redefining the font.

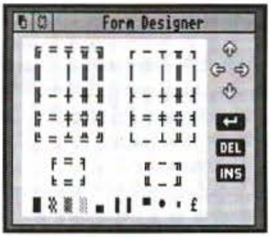


Figure 2. Form Designer character set

The !Forms application directory (hold Shift while double-clicking on the application icon) contains an Edit file with an example document (the *Forms* window should be opened first). There is also a suitable printer driver for PipeDream for the Hewlett-Packard DeskJet printer which can be transferred to the !PipeDream directory as detailed in the PipeDream manual.

Other printers should be made to select the IBM character set, e.g.:

```
Star LC-10:      ESC "t1"
Citizen 120-D:   ESC "~51"
```

Refer to your printer manual to find the codes specific to your machine. Depending upon your printer, and the application, it may be easier to switch the printer to IBM mode from its control panel, or to embed the necessary bytes at the start of the text file to be printed (we shall be covering the use of control codes in Edit shortly).

The window can be closed by clicking on the close icon, which also restores the default Archimedes font.

NOTE: Although the program file is quite short, it is dependent for its execution on a number of other files, including a complete set of screen definitions for all the symbols, a set of sprites, and a templates file, all of which make it impractical to include this excellent application in the magazine proper. RU

Using ANSI C

Part 3: An Icon Bar Application continued

by Lee Calcraft

Last month's instalment consisted almost entirely of a source listing for an icon bar application. The program was complete in itself, and may be compiled and run as it stands. It will not however do very much, but we will be adding functionality to it as this series progresses: its main purpose is to act as a testbed for implementing a variety of features via the use of RISC_OSLib. The major operational feature already built into the program is the menu system, and we will be taking a look at this in a moment. But to begin with, I want to look at other aspects of the program, and in particular, features not covered directly in the very useful example/tutorial section in the ANSI C Manual.

main()

Our main() function is a very simple one. It performs just three basic tasks. It stores a copy of the first argument supplied when the program was run, it calls the function cd_initialise(), and then it enters the endless *while* loop calling event_process() with each cycle. In the normal course of events the program will terminate when the function exit() is called elsewhere in the program - in this case, in the function i_menuproc() in response to the user selecting the *Quit* option from the menu.

The first line of the main() function picks up the first of any command line arguments following the filename issued at the time that the program was run. It makes use of the special variables argc and argv, treated in part 8 of our *Introducing C* series (RISC User Volume 4 Issue 4). But briefly, the present line checks to see if argc>1. If so it means that the program was run by issuing its filename followed by at least one other word (space separators are assumed). If there is such a word, we copy it (from argv[1]) into a global variable which has been set aside for the purpose. It can then be used at any later point in the program. Such an argument would typically be the name of a file to be loaded into our application.

We will look at cd_initialise() in a moment, after dealing with the important function event_process(). This function bears similarities to the Wimp poll loop used in Basic programs written for the Desktop. But unlike the latter, it does not return a reason code which is acted upon by the task. Instead, the function cd_initialise() supplies the addresses of a number of event handler functions which are automatically called by event_process() when corresponding events occur. Acorn's ANSI C thus adopts an object oriented approach to Desktop programming in which any given application will consist of a number of apparently isolated groups of functions. For example, an application with two windows running from the icon bar might set up an event handler for each window, plus one for clicks (Select or Adjust) on the icon bar icon, and one for an icon bar menu.

It is important not to draw too close a parallel between Basic's Wimp poll loop and the event_process() loop here. I have seen a number of cases where programmers unfamiliar with RISC_OSLib have simply inserted function calls within the event_process() loop. If their intention in doing this was to ensure that their function was repeatedly called, then the correct approach is to register the given function as a null event handler - of which, more anon.

The only valid reason that I can think of for inserting anything into the event_process() *while* loop is when using the set_jump() function for use with a signal handler.

cd_initialise()

The function cd_initialise() can be split into two parts. The first calls a number of initialising functions within RISC_OSLib. The function wimpt_init() sets up the program as a Wimp task. The parameter passed to it is the name which will appear in the Task Manager display and in error messages. The call to res_init() establishes the name of the present application directory, and this will be used when resources of various kinds, located within the application directory, are to be accessed. This call must be made before calling the function resspr_init(). This latter loads the application's !Sprites file, deriving the path to be used from the name registered with *res*. Finally template_init() and dbox_init() are called.

The remainder of the function is concerned with establishing icons and menus - and if our application required windows to be opened (as distinct from dialogue boxes) then they would also be created here. The function baricon() serves the dual purpose of placing the application's icon on the icon bar *and* registering an event handler - the function ed_iconclick() - for responding to clicks with the Select or Adjust button over this icon. At the moment this function does very little, simply generating a beep when it is called. We will give it more work to do in due course. The rest of the code in cd_initialise() is concerned with menus, and I want now to take a more detailed look at this aspect of RISC_OSLib.

CREATING MENUS

The function menu_new() is used for creating new menu and sub-menu structures. It has two parameters: the menu title - which in the case of the top level menu is the title of the application - and a string containing the names of the menu entries. This is a comma-separated list in which additional symbols may be used to indicate that an item is ticked or greyed out etc. Table 1 gives a summary of these. Note that although the ">" symbol results in a right-pointing arrow appearing at the right of the corresponding menu entry, it should only be used to indicate that the menu leaf is a dialogue box. If a sub-menu is to be attached at a given entry you should not use the ">" symbol at the corresponding entry since this will prevent your sub-menu from being attached.

!	the entry is ticked
~	the entry is shaded and unselectable
>	the entry leads to a dialogue box
¦	the entry has a dashed line above it (the ¦ replaces any immediately preceding comma separator)

Table 1. Symbols recognised by menu_new()

Two calls to menu_new() are made. One for the top level icon bar menu, and one for its single sub-menu. For ease of access I have put the menu entries for both menus into macros early in the program. Note that in commercial programs it is recommended that menu strings should be read via msg_lookup() to facilitate foreign language versions. The function menu_new() returns a pointer to the menu structure on successful creation, and this is of type *menu*. If menu_new() fails, it returns NULL, and this will cause the program to terminate.

Once the menu and sub-menu have been created, the latter must be attached to the former. This is achieved using the function menu_submenu(). This has three parameters: the pointer to the parent menu structure, the number of the entry on the first menu at which to attach the second, and the pointer to the sub-menu structure. It is usual to use macros to define the menu entry items. This makes it easier to understand the switch statements handling menu choices, and also makes altering menu trees relatively painless. Here we have attached the sub-menu to the item i_menutest. This has a value of 2.

As we reported in Hints & Tips some time ago, it is a feature of RISC_OSLib that if menus are being created to a depth greater than two, sub-menus must be attached in reverse order. In other words, you should start with the sub-menus at the bottom of the menu tree, and work your way up to the parent menu.

MENU EVENT HANDLERS

The final act in our initialising function is to establish an event handler for the menu. There are two possible functions which you could use for this:

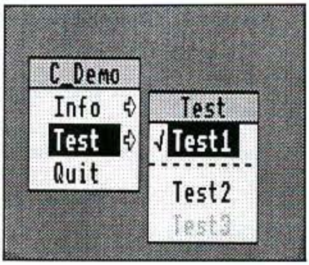
`event_attachmenu()` or

`event_attachmenumaker()`

The first is used in the simplest cases where you do not need to intervene immediately prior to the creation of a menu. The second function registers *two* functions: a normal menu event handler, such as might be used with event_attachmenu(), plus a second function which will be automatically called immediately prior to opening your menu. This allows you to tick or shade appropriate entries before the menu appears.

It is worth stressing that you do not necessarily need to use this more complex approach even if you are ticking or shading certain menu items. If for example the actions which cause alterations to the appearance of the menu are caused by the user making selections from the menu - e.g. clicking on a particular entry to tick or untick it - you can set these options as a direct response to the user's action - and once an entry is ticked, it will remain in that state until you untick it.

In our example program we have adopted the more complex approach partly because Acorn's examples cover the simpler of the two. The function event_attachmenumaker() has four parameters: the handle of the window to which the menu is to be attached (or the value win_ICONBAR if it is to be attached to the icon bar icon), the names of the two event handler functions plus a (void *) handle which will be passed to them. In this simple application we do not need to make use of this, and have set it to zero, but in more complex situations it might be used to indicate the origin of a particular event.



The menu structure of the demonstration program

With the event handlers installed, our function i_premenuproc() will be called immediately before the icon bar menu is opened. This function must return the pointer to our menu structure. The reason for this is that it would permit i_premenuproc() to actually *create* the menu if required. But we have already done this in cd_initialise().

At the moment i_premenuproc() makes a single call to menu_setflags() to tick or untick menu item i_tsubmenu_opt1 according to the state of the flag t1_ticked. This flag is toggled in our function i_menuproc() - the menu event handler installed with the call to event_attachmenumaker(). The useful function menu_setflags() can also be used to shade or unshade a given entry. It has four parameters: a pointer to the menu structure, the number of the entry to be altered and two further integers. These respectively take the value TRUE or FALSE, and determine whether the entry should be ticked and shaded respectively.

That is all we have space for this month. We will continue this topic next time.

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BEEBUG, 117 Hatfield Rd, St. Albans, Herts AL1 4JS

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PD35 Disc
Contains ten PD outline fonts for use in RISC OS applications such as WP and DTP.

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PD13 Disc
Contains the !Projector application that displays films created with the Ace Computing Mogul package. Six example films are included.

PD18 Disc
Contains a program that displays several still and animated ray traced pictures.

PD33 Disc
Contains a program that displays several still and animated ray-traced pictures.

ART

PD15 Disc
Contains Arctist+ and BigM, both 256 colour art packages, along with Design, a symmetrical pattern designer.

COMMS

PD34 Disc
Contains Arcterm3, a full comms software package. Arc100, a scrolling text terminal. Grapevine, another scrolling text terminal but multi-tasking. TaskData, a multi-tasking viewdata comms package. Download, an application for transferring files between machines via serial port. Timer, a utility for recording on-line time and call cost. The latest version of Sparkplug, the file decompression program. Along with these is a complete set of programs for running a bulletin board system on your Archimedes.

DEMOS

PD12Disc
Contains 5 sound and graphics demos from Hugo Fiennes of the Serial Port. All five are stunning examples of what the Arc is capable of.

PD21 Disc
Contains three demos, Balls, Balls2 and BIA-Tetris. The latter is a game as well as a demo.

PD22 Disc
Contains three demos, Noah, Chips and Demo01.

PD23 Disc
Contains four demos, Bounce, Crimbo, ColDemo and Rotate.

PD24 Disc
Contains three demos, Demo, Gopher and Overscan.

PD25 Disc
Contains four demos, Deskballs, DudsDemo, EgIntro, and Z-Brother.

PD 26 Disc
Contains three demos, Sister, Wibble and SkullDemo.

PD27 Disc
Contains two demos, GrannyChow and Windows.

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Contains REG, a suite of programs for recording student achievement levels in schools. Also, included is a way of recording attainment with Colton Software's Pipedream.

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PD01 Disc
Contains Soundtracker playroutine plus the following tunes: Aces-Hi, Acidbat2, Afl, Alf, ArtNoise, AxelF, Backpopped, Big, Blitzwing, Blizzard02.

PD02 Disc
Contains Soundtracker playroutine plus the following tunes: BatMix, Bobby, Brill, Burning, Chartmix, Chipgene, Demo2.

PD03Disc
Contains Soundtracker playroutine plus the following tunes: Confusion, Crack, Criminal, Dear, Demons, Dns, Elephant.

PD04 Disc
Contains Soundtracker playroutine plus the following tunes: Doc12, Funky, Ducksong, Electric_2, EndTheme, Enutomed, Equinoxe5, FinalTFDMI, FinalVis.

PD05 Disc
Contains Soundtracker playroutine plus the following tunes: Fyc, GoodTune, Hello, HowDeepIs, Huba, Humanoid, Hunters, Hymn, Idea, Igarun, IntoB.

PD06 Disc
Contains Soundtracker playroutine plus the following tunes: Jazzid, Jmj_China, LastNinja2, Like, Magnetic4, MegaForce0, Minimize, Mod, New_Biz.

PD07 Disc
Contains Soundtracker playroutine plus the following tunes: MyWay, Nothing-2, Oooerr, Outrun, Pacman, Pat,PetShop, Pretend, SaySaySay2, Steeve

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Contains 230 tunes for loading into the music package Maestro, with enough variety to suit most tastes.

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PD19 Disc
Contains 10 games programs, Adevnture, Battle, Battleships, Connect4, Darts, Fish (Pelmanism), Fruit Machine, Golf, Hangman and Impact.

PD20 Disc
Contains 12 games programs, Invaders, Line Of Five, Othello, Pelmanism,Rocks, Rubik Cube, Simon, Solitaire, Star Trek, Tetris, Tile Trial and Yahtzee.

UTILITIES

PD28 Disc
Contains 20 utilities of various types. These are all extremely good and there is something here no doubt to please everyone. Space does not permit full descriptions but the file list is, 1stFile, ASm2, CloseUp, Crypt, Dir, Display, Drawlink, Dustbin, Filetypes, FileUtils, Find, Keys, Loadprogs, MultiPrint, NewBar, NewCodes, PD_Impress, PrinterTx, ProgCalc, and Set_Type.

PD31 Disc
Contains 17 utilities and applications. There is plenty on this disc to choose from and should find favour with most people. Brief descriptions of the list is as follows: Address Book, Address Labeller, Disc Space Display. Desktop Calendar, Cassette Inlay Printer (Two of these!), DFS Disc Reader, Automatic Application Creator, Arc to Psion Transfer, ROM Speed-Up, STD Codefinder, System Utilities, Trash Can, Front end for Twin, Front end for View, Volume Controller, Control of Pointer by keys.

CLIPART AND PICTURES

PD29 Disc
Contains over 4 megabytes of Sprite pictures which can be used as clip art to load into DTP or use in your programs. The files are naturally in a compressed form, and the disc contains the file to decompress them and instructions.

PD30 Disc
Contains over 2 megabytes of Sprite clip art and Draw files to load into DTP or use in your programs. The files are naturally in a compressed form and the disc contains the file to decompress them as well as instructions.

TRICKS AND NOVELTIES

PD17 Disc
Contains a collection of 27 amusing trick and novelty programs. Some of them produce the weirdest effects!

PD32 Disc
Contains an application called Cookie. When run, it puts up a window containing a 'fortune cookie' or a well-known saying or piece of philosophy. Be warned!
This program is very addictive once seen, also rather zany not to mention, occasionally saucy! There are some 6000 sayings. Also on this disc is a scrolling text demo with soundtrack music called Invade that also features a space invaders game within it.

Public Domain Sampler Disc (PDS1)

Ccontains sample programs from the Beebug Public Domain Software Library.

SOUNDTRACKER
The Soundtracker application is used to play back a music file ***Toccata*** made of real sampled sounds which are sequenced to form a complete tune lasting several minutes. The quality of this is quite stunning, particularly if played through the computer's monitor speaker, or a hi-fi system.

ACCOUNTS
This is a home accounts program. There are no instructions included with the program but all functions are selected from the main menu which is self explanatory. An example file is included.

SC LABEL
A versatile disc labelling program producing professional looking labels for 3.5" discs. A Help file is included with the program.

FOLLOW
A novelty program that when run puts a pair of beady eyes on the Desktop which follow the mouse pointer wherever it goes. Eerie!

HANGMAN
A well presented and implemented version of the old word game of Hangman with an animated finale.

MULTIPRINT
A utility to allow the printing of files by creating a task list of the files to print before sending them to the printer. A Help file is included within the program.

ROTATE
A fascinating animated demo in which you can alter the effects by pressing a few keys on the keyboard.

STD
A useful utility to search for telephone STD codes or find a town from its STD code. A ReadMe file is included in the program.

WANDA
A novelty demo program that infests your desktop screen with a shoal of bubble-blowing goldfish!

Worldwide Time Keeping (continued from page 23)

```
 1450 PROCmenu_item("New clock",0,m_locs
%)
 1460 PROCmenu_item("GMT/BST",0,m_gmt_bs
t%)
 1470 PROCmenu_item("Save status",0,-1)
 1480 PROCmenu_item("Quit",&80,-1)
 1490 ENDPROC
 1500 :
 1510 *** Loading & Saving
 1520 :
 1530 DEF FNload_locations
 1540 ch%=OPENIN("<WorldTime$Dir>.Locati
ons")
 1550 L%=-1
 1560 WHILE NOT EOF#ch%
 1570  L%+=1:DIM B% 16:date%(L%)=B%
 1580  A$=GET$#ch%:P%=INSTR(A$,",")
 1590  loc$(L%)=LEFT$(A$,P%-1)
 1600  T%=VAL(MID$(A$,P%+1))
 1610  tdiff%(L%)=60*(T%DIV100)+(T%MOD10
0)-720
 1620 ENDWHILE
 1630 CLOSE #ch%
 1640 =L%
 1650 :
 1660 DEF PROCload_status
 1670 ?t_uk%=3:SYS "OS_Word",14,t_uk%
 1680 ch%=OPENIN("<WorldTime$Dir>.Status
")
 1690 IF ch%=0 gmt%=0:PROCnew_clock(0,12
8,884):ENDPROC
 1700 INPUT#ch%,gmt%
 1710 IF gmt%=1 tdiff%()-=60:tdiff%(0)+=
60
 1720 WHILE NOT EOF#ch%
 1730  INPUT#ch%,L%,X%,Y%
 1740  PROCnew_clock(L%,X%,Y%)
 1750 ENDWHILE
 1760 CLOSE #ch%
 1770 ENDPROC
 1780 :
 1790 DEF PROCsave_status
 1800 ch%=OPENOUT("<WorldTime$Dir>.Statu
s")
 1810 PRINT#ch%,gmt%
 1820 FOR L%=0 TO last%
 1830 IF window%(L%) THEN
 1840  !block%=window%(L%)
```

```
 1850  SYS "Wimp_GetWindowState",,block%
 1860  PRINT#ch%,L%,block%!4,block%!16
 1870 ENDIF
 1880 NEXT
 1890 CLOSE #ch%
 1900 ENDPROC
 1910 :
 1920 *** Wimp Creation
 1930 :
 1940 DEF PROCnew_clock(L%,X%,Y%)
 1950 B%=block%+4:L$=STR$L%
 1960 $B%=STRING$(152,CHR$0)
 1970 :
 1980 B%!0=X%:B%!8=X%+276
 1990 B%!12=Y%:B%!4=Y%-104
 2000 B%!24=-1:B%!28=&87000012
 2010 B%!32=&207:B%!48=276:B%!44=-104
 2020 B%!56=9:B%!64=spr%
 2030 $(B%+72)=loc$(L%):B%!84=2:B%+=88
 2040 :
 2050 SYS sop%,&10F,spr%,L$,,128,14,12
 2060 !B%=10:B%!8=266:B%!4=-60:B%!12=-4
 2070 B%!16=2:$(B%+20)=L$:B%+=32
 2080 :
 2090 !B%=4:B%!8=272:B%!4=-100:B%!12=-64
 2100 B%!16=&27000129:B%!20=date%(L%)
 2110 B%!24=-1:B%!28=17
 2120 :
 2130 SYS "Wimp_CreateWindow",,block%+4
TO window%(L%)
 2140 !block%=window%(L%)
 2150 SYS "Wimp_OpenWindow",,block%
 2160 clocks_on%+=1
 2170 !date%(L%)=-1:PROCupdate_clock
 2180 ENDPROC
 2190 :
 2200 DEF PROCcreate_menu(RETURN M%,titl
e$,width%,items%)
 2210 DIM M% 27+24*items%:$M%=title$
 2220 M%!12=&70207:M%!16=width%
 2230 M%!20=44:M%!24=0:I%=M%+28
 2240 ENDPROC
 2250 :
 2260 DEF PROCmenu_item(item$,flag%,sub%
)
 2270 !I%=flag%:I%!4=sub%:I%!8=&7000021
 2280 $(I%+12)=item$:I%+=24
 2290 ENDPROC
```

C Notebook
Hints & Queries

dbox + alarm = DEAD MOUSE

Graham Jones writes that in a game he was writing which made use of alarms to carry out each move, dialogue boxes failed to respond to mouse clicks. He solved the problem by looking at the source code supplied with David Pilling's Chess, which uses a similar approach, but which sets the Wimp event mask to zero before calling dbox_fillin(). His question is: why is this necessary?

The simple answer is that there is a bug in dbox_fillin() which results in unresponsive dialogue boxes if any alarm is set. If however the event mask is set to zero before dbox_fillin() is called the problem does not occur. So if you have access to all calls to dbox_fillin(), you can use an approach similar to that adopted in Chess:

```
wimp_emask mask;
mask=event_getmask();
dbox_showstatic(d);
event_setmask(0);
switch (dbox_fillin(d))
{
  etc.
}
chesslib_setprompiece(x);
event_setmask(mask);
dbox_dispose(&d);
```

If you do not have such access, as for example when using txtedit, the only fix is to set the event mask to null for at least as long as alarms are pending. Acorn are aware of this bug, and it should be fixed in due course.

Lee Calcraft

REDIRECTING INPUT AND OUTPUT

David Pilling

Many C programs are written as filters. That is they take one file, transform it and produce an output file. A common way of implementing this is to read bytes from standard input, and write them to standard output. If you want to use them on files, you redirect *stdio*. The familiar way of doing this under RISC OS is:

```
*filter { < xx } { > xx }
```

However, what is not often realised is that C has its own redirection using just "<" and ">". So if *filter* is written in C, you could just type:

```
*filter <xx >xx
```

This is important because if you use RISC OS, output will have lines delimited by CR-LF pairs; but using C will give you just LFs.

SENDING EOF FROM THE KEYBOARD

David Pilling

Another trick, while on the subject of I/O is that if your C program is reading standard input from the keyboard, how do you tell it to finish - i.e. how do you send an EOF ? The answer is:

```
type Ctrl-D
```

A MORE INFORMATIVE assert() MACRO

Graham Jones

The assert() macro is not very informative. If you are running a Desktop program, it will just halt the program with no message at all when the assertion is TRUE. The following line defines a much more informative macro wassert() for use within the Desktop:

```
 #define wassert(e)  ((e) ? (void)0 : w
err(TRUE,"Assertion %s failed. File %s,
line %d", #e, __FILE__, __LINE__))
```

Now if any call to wassert() is made with an argument which is TRUE, you will get a Wimp error box giving the actual argument passed, the name of the source file, and the line number within it. You could also change the first parameter of werr() to FALSE if you wanted the program not to terminate when the assertion was TRUE.

Note that the underscores before and after FILE and LINE are both double underscores.

Multi-Mode Sprite Viewer (continued from page 31)

```
 1260 ENDCASE
 1270 PROCmode
 1280 :
 1290 SYS "OS_ReadModeVariable",smode%,4
 TO ,,xe%
 1300 SYS "OS_ReadModeVariable",smode%,5
 TO ,,ye%
 1310 !bk%=han%:SYS "Wimp_CloseWindow",,
bk%
 1320 bk%!0=0:bk%!4=-(sy%<<ye%)
 1330 bk%!8=(sx%<<xe%):bk%!12=0
 1340 SYS "Wimp_SetExtent",han%,bk%
 1350 !bk%=han%:bk%!4=320:bk%!8=256
 1360 bk%!12=960:bk%!16=768
 1370 bk%!20=0:bk%!24=0:bk%!28=-1
 1380 SYS "Wimp_OpenWindow",,bk%
 1390 ENDPROC
 1400 :
 1410 DEF PROCmode
 1420 IF smode%=-1 THEN ENDPROC
 1430 SYS "ColourTrans_SelectTable",smod
e%,pal%,-1,-1,trans%
 1440 ENDPROC
 1450 :
 1460 DEF PROCerror
 1470 bk%!0=ERR:$(bk%+4)=REPORT$+CHR$(0)
 1480 SYS "Wimp_ReportError",bk%,1,"Spri
te viewer"
 1490 ENDPROC
 1500 :
 1510 DEF PROCwindow
 1520 bk%!0=320:bk%!4=256
 1530 bk%!8=960:bk%!12=768
 1540 bk%!16=0:bk%!20=0
 1550 bk%!28=&ff000002
 1560 bk%!32=&70207:bk%!36=&20103
 1570 bk%!40=0:bk%!44=0
 1580 bk%!48=0:bk%!52=0
 1590 bk%!56=&119:bk%!60=0
 1600 bk%!64=base%
 1610 bk%!68=1
 1620 bk%!72=title%:bk%!76=-1:bk%!80=256
 1630 bk%!84=0
 1640 SYS "Wimp_CreateWindow",,bk% TO ha
n%
 1650 ENDPROC
 1660 :
 1670 DEF PROCicon
 1680 bk%!0=-1
 1690 bk%!4=0:bk%!8=0
 1700 bk%!12=68:bk%!16=68
 1710 bk%!20=&3002
 1720 $(bk%+24)="!sprview"
 1730 SYS "Wimp_CreateIcon",,bk%
 1740 ENDPROC
 1750 :
 1760 DEF PROCmenu
 1770 $menu%="Sprite View"
 1780 menu%!12=&70207
 1790 menu%!16=176
 1800 menu%!20=44
 1810 menu%!24=0
 1820 menu%!28=&80
 1830 menu%!32=-1
 1840 menu%!36=&07000021
 1850 $(menu%+40)="Quit"
 1860 ENDPROC
 1870 :
 1880 DEF PROCset_size(size%)
 1890 LOCAL new%
 1900 SYS "Wimp_SlotSize",base%-&8000+si
ze%,-1 TO new%
 1910 IF (new%+&8000-base%)<size% THEN E
RROR 1 "Unable to claim memory"
 1920 ENDPROC
 1930 :
 1940 DEF PROCforce
 1950 !bk%=han%
 1960 SYS "Wimp_GetWindowState",,bk%
 1970 SYS "Wimp_ForceRedraw",-1,bk%!4,bk
%!8,bk%!12,bk%!16
 1980 ENDPROC
```

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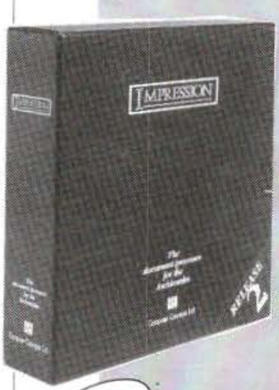
Virus Alert (continued from page 41)

```
 2190 IF b%=0 THEN ERROR 255,"No !run fi
le present in app"+name$
 2200 ext%=EXT#(b%):CLOSE #b%
 2210 IF ext%>max_buff%-100 THEN ERROR 2
55, "!Run file too long for buffer"
 2220 SYS "OS_File",14,fname$,c_buff%+l%
 2230 l%+=ext%
 2240 IF NOT FNboot_called THEN SYS "OS_
File",10,fname$,&FEB,,c_buff%,c_buff%+l%
 2250 ENDPROC
 2260 :
 2270 DEF PROCadd_line(line$)
 2280 $(c_buff%+l%)=line$
 2290 l%+=LEN(line$)
 2300 c_buff%?l%=10:l%+=1
 2310 ENDPROC
 2320 :
 2330 DEF PROCdo_install
 2340 REM Create Install file
 2350 IF f_install$<>"NONE" THEN
 2360 ins$=name$+"."+f_install$
 2370 l%=0
 2380 IF FNrnd_bool PROCadd_line("")
 2390 IF FNrnd_bool PROCadd_line(install
_guise1$)
 2400 PROCadd_line(c_install$)
 2410 IF FNrnd_bool PROCadd_line("")
 2420 IF FNrnd_bool PROCadd_line(install
_guise2$)
 2430 SYS "OS_File",10,ins$,&FEB,,c_buff
%,c_buff%+l%
 2440 ENDIF
 2450 ENDPROC
 2460 :
 2470 DEF PROCdo_boot
 2480 REM Alter/create !boot file
 2490 l%=0
 2500 IF FNrnd_bool PROCadd_line("")
 2510 IF FNrnd_bool PROCadd_line(boot_gu
ise$)
 2520 PROCadd_line(c_check$)
 2530 fname$=name$+".!Boot"
 2540 b%=OPENIN(fname$)
 2550 IF b% THEN
 2560 ext%=EXT#(b%)
 2570 CLOSE #b%
 2580 IF ext%>max_buff%-100 THEN ERROR 2
55, "!Boot file too long for buffer"
 2590 SYS "OS_File",14,fname$,c_buff%+l%
 2600 l%+=ext%
 2610 ELSE
 2620 line$="iconsprites <obey$dir>.!Spr
ites"
 2630 $(c_buff%+l%)=line$
 2640 l%+=LEN(line$)
 2650 c_buff%?l%=10:l%+=1
 2660 ENDIF
 2670 SYS "OS_File",10,fname$,&FEB,,c_bu
ff%,c_buff%+l%
 2680 ENDPROC
 2690 :
 2700 DEF FNrnd_bool
 2710 =RND(2)>1
 2720 :
 2730 DEF PROCread_custom
 2740 o%=OPENIN("<V_Alert$Dir>.Custom")
 2750 IF o%=0 ERROR 255, "Custom file no
t found"
 2760 module_name$=GET$#o%
 2770 c_check$=GET$#o%
 2780 c_install$=GET$#o%
 2790 f_data$=GET$#o%
 2800 f_install$=GET$#o%
 2810 boot_guise$=GET$#o%
 2820 run_guise$=GET$#o%
 2830 install_guise1$=GET$#o%
 2840 install_guise2$=GET$#o%
 2850 CLOSE #o%
 2860 ENDPROC
 2870 :
 2880 DEF FNwimperror
 2890 !block%=ERR
 2900 $(block%+4)=REPORT$+" (internal er
ror code "+STR$ERL+")"+CHR$0
 2910 SYS "Wimp_ReportError",block%,3,"V
irus Alert" TO ,response%
 2920 IF response%=2 THEN SYS "Wimp_Clos
eDown":=TRUE ELSE =FALSE
```

Listing 4. V_Alert Custom file contents.

```
Module name
Check command
Install command
Name of data file
Name of Installer file
!Boot disguise e.g. | Protected !boot
!Run disguise  e.g. | Protected !run
Install disguise 1 e.g. Set ZZ$Dir MM
Install disguise 2 e.g. Unset NN$Dir
```

LaserDirect



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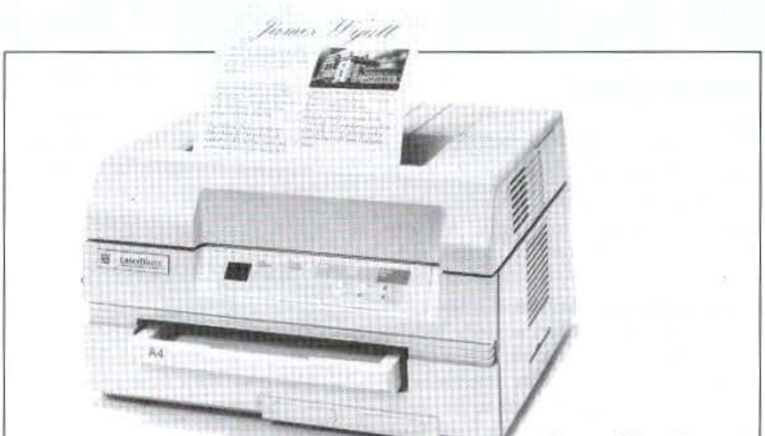

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Hints & Tips. . . Hints & Tips

MORE ON FONT PATHS

Alan Wrigley

In last month's *Hints & Tips* I described a way of using a number of different font directories to get around the problem of applications which crash if the font catalogue is too large. A more comprehensive way to deal with this is to arrange that each and every application which can use fonts is set up at the time of installation so that only those which it can actually handle will be known to it. The way to do this is firstly to split up your fonts into separate directories, as described last month. Assuming that you have two, called *!Fonts1* and *!Fonts2*, edit their !Run files so that the relevant line in Fonts1 reads:

```
    Set Font$Prefix1 <Obey$Dir>
```

and in Fonts2:

```
    Set Font$Prefix2 <Obey$Dir>
```

Now edit the !Run file of each application which uses fonts, so that those which can only handle the number of fonts contained in !Fonts1 have the line:

```
    SetMacro Font$Path <Font$Prefix1>.
```

and those which can handle all the fonts contain the line:

```
    SetMacro Font$Path <Font$Prefix1>.,<Fo
nt$Prefix2>.
```

When each application starts up, *Font$Path* will as a result be set to whatever that application can handle, and since most applications read the font catalogue only when they start up, they will not be aware of any extra fonts which may crash the application.

CARET COLOUR

Lee Calcraft

The default colour of the caret (the Arc's narrow vertical text cursor), when used against a white background in the Desktop is red in all colour modes. As you may know, the colour depends on the colour of the text background, and if you alter this you can easily end up with a caret colour which is not sufficiently visible amid a screenful of text. However, the colour of the caret also depends on the screen mode used in the Desktop. So if you are using Edit in mode 12, for example, and entering text against a black background, the caret is an insignificant cream, whereas changing to mode 15 turns it into a vivid light blue colour.

LOADING TEMPLATES

Andrew Cumming

The following function is useful if you are reading in several window templates, each with indirected data, from a template file:

```
    DEFFNload_template(name$)
    LOCAL h%
    SYS "Wimp_LoadTemplate",,bk%,i%,iend%,
-1,name$,0 TO ,,i%
    SYS "Wimp_CreateWindow,,bk% TO h%
    =h%
```

It takes the template identifier as a parameter and returns the handle of the created window. i% should point to the start of a block of memory to hold the indirected data, and is updated after each call. It is not therefore necessary to have separate blocks for each window. *iend%* should point to the end of the block dimensioned in i%.

An example of its use is given below. You may need to alter the values in the DIM statement to suit your own application.

```
    DEFPROCcreate
    DIM bk% 2000,i% 2000
    iend%=i%+2000
    SYS "Wimp_OpenTemplate",,"<App$Dir>.Te
mplates"
    main%=FNload_template("Main")
    info%=FNload_template("Info")
    save%=FNload_template("SaveBox")
    SYS "Wimp_CloseTemplate"
    ENDPROC
```

HELP

Ben Avison

When you display a Filer submenu for an application, if there is an item in the application directory called *!Help*, then the entry *Help* is added to the submenu. Clicking on this will attempt to run !Help. Often this is a text file, and so it will be displayed in a command window, or loaded into Edit if Edit has been seen. However, !Help could equally be any other filetype, or more importantly, another application. Thus if you copy the !Help interactive help application from Applications disc 2 into another application directory (it only requires 10K of disc space), then clicking on the *Help* item on the Filer submenu will automatically load the Help application.

REVELATION MODE CHANGE

G.J. Allsopp

Revelation is a very good sprite creator/editor but to use it to its full potential, mode 15 is necessary. Since many users normally use mode 12, the inability to change modes while Revelation is running can be frustrating. Use the RunMode utility created by Alan Wrigley's hint in RISC User Volume 4 Issue 6, but alter line 20 to:

```
newmode=15
```

then include in your start-up boot application the line:

```
Run <Obey$Dir>.RunMode
```

assuming that you are starting up Revelation as part of your boot sequence. Alternatively you could include the above line in Revelation's !Run file, having first put a copy of RunMode into Revelation's application directory.

DRAWING ARCS

Jeff Gorman

To use Draw to join the ends A and B of any two lines with a circular arc (see figure 1), first find their point of intersection X. Join the ends with an open curved line segment. Move the control point CP1 to halfway between A and X, and CP2 halfway between B and X. If the included angle between the lines happens to be 73 degrees, the arc produced will match a circular arc. If the angle is less, move the CP somewhat nearer to A, otherwise move it further away. If accuracy is important, find the centre of the required arc by using *Copy, Rotate* the copied line through 90 degrees, then drag to erect perpendiculars at A and B and draw a circular arc with the point of intersection as centre. The arc can then be matched and the circle and perpendiculars deleted. If the lines are parallel, the distance of the CPs from the start point should be two thirds of the distance separating the parallels.

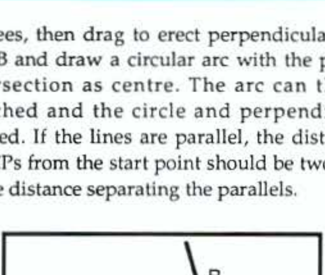

Figure 1. Joining lines with a circular arc

BASIC EDITOR FRONT END

F. Taylor

I altered RISC User's *BEdit* application to incorporate the improvements given in Volume 4 Issue 3 to enable saving back to the directory from which the file had come. Because I had already encountered the problem of saving to the correct directory, I had started to include the full path in the in-core filename in the first REM statement. However, this must be the *full* path name including filing system, disc name etc. An incomplete pathname will always be related to the CSD, and can lead to problems. Using the leafname will always work correctly.

CUSTOMISED EDIT WINDOWS

Arnold Bagshott

The size and position of each Edit window on creation is determined by the template named "text" within Edit's *Templates* file. To alter either the starting size or position of the window, simply use the template editor *FormEd* (e.g. as on the RISC User Volume 4 Issue 3 disc) to edit the "text" template.

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Technical Queries

Dear Sir

I have tried to use your Wessex font (Volume 4 Issue 8 disc) as well as several public domain fonts, but after incorporating them into my !Fonts directory, all I get is a message from Edit saying "Font not found", even though the font appears on the menu. Using Draw, I do not get an error, but the characters look nothing like those in the illustration in the magazine. Can you help?

Bob Newsham

The reason for your problem is that you do not have the outline font manager, which is necessary in order to use outline fonts. The fonts supplied with every Archimedes on Applications disc 1 are the older bit-mapped fonts, and the font manager that comes with them is only suitable for these older fonts. However, outline fonts have many advantages over their bit-mapped counterparts, and for the last couple of years all new fonts have been of the outline type. To use these fonts, Acorn has produced an outline font manager, but unfortunately it is only supplied with commercial font packs, or with DTP packages and other applications which use outline fonts, and is not available separately. Unless you have the outline font manager, therefore, it is not possible to use public domain fonts, or fonts which are supplied essentially as bonus items on magazine discs, and this is normally made clear in the help file accompanying the font.

As you have seen, different applications have different ways of dealing with a "missing" font. Edit generates an error, whereas Draw simply uses the system font if the requested font is not available.

Alan Wrigley

Dear Sir

*In an application **MyApp**, currently on a floppy disc, I wish to open a directory viewer for the directory **!MyApp.Files**. The !Run file includes the lines:*

```
Set MyApp$Dir <Obey$Dir>
Filer_OpenDir <MyApp$Dir>.Files
```

but this gives the error message "Bad filing system name". Including the full pathname explicitly gives the desired result, but would not work if the application were to be installed in an arbitrary directory on a hard disc. What am I doing wrong?

Colin Attenborough

Many operating system commands pass their parameters through the SWI call OS_GSTrans, which among other things evaluates expressions contained within angle brackets. If the expression is a string, the string will be taken as the name of a system variable, and the actual value of that variable will be passed back by OS_GSTrans. Commands such as *Set and *Run behave in this way, so when an Obey file issues a command such as:

```
Run <Obey$Dir>.!RunImage
```

the current value of *Obey$Dir* will be substituted. Unfortunately however, *Filer_OpenDir* does not pass its parameters through OS_GSTrans, and so if you issue a command such as *Filer_OpenDir <MyApp$Dir>*, the Filer will attempt to open a directory called *<MyApp$Dir>*, which of course it will not find.

The easiest solution is to use *Set with a temporary variable to expand the full command before it is issued to the operating system, e.g.:

```
Set Alias$Temp Filer_OpenDir <MyApp$Dir>
Temp
Unset Alias$Temp
```

Thus Temp is created as an alias for the required command, including the expanded pathname, the command Temp is then issued, and finally the variable is unset as it is no longer required.

For more information on GSTrans formats, see Appendix I of the User Guide.

Alan Wrigley

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Dabs Press compiler £45, Minerva Gamma Plot £27.50, Minerva System Delta Plus £27.50, Acornsoft Twin £10, Voltmace Delta-cat joystick £12, Wordwise Plus (disc) £10, Musbury consultants DigiSim £15 (electronic digital circuit simulator), Interdictor II £12, all as new. Tel. (0782) 771914 after 8pm.

Atari 520 ST FM and over 10 titles of software very good condition £300 o.n.o. Tel. (04023) 44179.

Archimedes software; Wonderland £15, Nevryon £10, Twin World £10, Ironlord £10, Micro Drive £8. + postage. Tel. (0726) 814488.

WANTED: any info or help with a 21Mb hard disc drive "Ice Microcube" by ICE Ltd, Hayden 54 Hartland Road, London, E15, 4AH. Tel. 081-534 0873 anytime.

A3000 colour system, 1Mb, RISC OS, E-Type, Fun School 2, little used, mint condition, must sell £490 or offer. Tel. 081-360 8076 home, 081-956 5488 office.

WANTED: Integrex 132 colour printer. Tel. (0792) 299793.

Centronics GLP printer complete with spare ribbons, prints draft and NLQ, Epson FX compatible £50, also EGA graphics adaptor for IBM £40. Tel. (0245) 400419.

Unused 3-D drawing software in original cases (cost £140): Euclid £30, Arclight £25, Mogul £10, or all for £60. Tel. (0532) 653643.

Arc games for sale; Word Up Word Down £5, Startrader £5, Terramex £10, UIM £10, Inertia £8, White Magic £8, Orion £8, or £50 the lot. Tel. (0825) 790579 after 5pm and ask for Dean.

A3000 (no monitor) £300, owner upgrading. Tel. (0702) 586536.

NEC P2200 printer 24 pin LQ compatible 360 dpi £140, multipod digitiser/sound sampler v2.20 £75, space saver printer stand £15, Technomatic floppy drive adaptor £20, 1st Word Plus £25, ArcComm v1 £20, Enthar 7 £10, if sold altogether £275. Tel. (0272) 256196 day or (0271) 850355 eves.

A440 with RISC OS, Panasonic 1124 printer, both boxed and in perfect 'as new' condition £1250. Tel. 081-743 8000 extn 5844.

A310 base unit, 4 slot backplane, RISC OS, ANSI C release 3, Software Developers Toolbox and various magazines £550. Tel. (0509) 672846.

A310 base unit with manuals and fitted with 1Mb RAM & RISC OS 2.00, 2 slot backplane & fan (Acorn), hard disc podule (ST506) & 40Mb internal drive, Acorn App1 & App2 and some PD software installed, BEEBUG floppy disc interface & Buffer (MkII), mouse works but needs replacing, otherwise all in very good condition £650 sorry no offers, no cheques, will happily demonstrate. Tel. (0767) 691495 between 10am and 9pm.

Informix 4GL - discs only £70, Panasonic KX-P1124 printer £130, 300 baud modem with cable £20, C Dabhand Guide & disc £15, Mapventure £10, Interdictor I, Quest, DFS Filer, Superior Golf, Family History all £5 each, A3000 carrrying case £15, also various User Guides £5 each, magazines £1 each. Tel. (04867) 80632.

W.E. 40/80T 5.25" DD £79, W.E. DD Interface £11, BEEBUG DD Interface £22, BEEBUG Arc Serial Link £11, Snap Camera software and manual for BBC micro £20, C Dabhand Guide £8, all items hardly used and prices negotiable. Tel. (0494) 764804 after 6pm.

WANTED: Arc 410 tutor; My 8 yr old daughter is keen to learn more about the computer, she has a number of basic educational programs and would like to progress further. I am looking for someone with patience to help the younger generation, may suit older child or student. We are in the NW3 area. Tel. 081-202 1099 office hours or 071-435 7058 eves.

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Postbag Postbag

VIDEO RECORDERS

Is it possible to record on a video cassette recorder screen images from an A3000? The connector that fits the monitor is the same as the connector on the back of my VCR, but when I tried connecting them together nothing was recorded; also the monitor could not be connected so I couldn't see what I was doing. Do I need a special lead or is it more complicated than that?

Stephen Kendal

You can use a video recorder to record A3000 screen images (and those on any Archimedes) by connecting the video recorder to the Mono Video socket, but this will of course give a mono image. The colour output from an Arc is in RGB format and needs to be converted to the composite video format used by the video recorder (using, for example, one of the Chroma 100 series of PAL encoders produced by Wild Vision - see this month's *News* pages).

Alternatively, you could connect a modulator to the computer, and connect the output to the UHF input of the video recorder.

HELP WITH WIMP PROGRAMMING

Could you please advise over the choice of books available to programmers who wish to learn Wimp based programming from the beginning. I have gained reasonable experience in Basic, but now need to progress.

Keith Vernon

It is difficult to advise anyone with regard to suitable books for Wimp-based programming. *The Programmer's Reference Manual* published by Acorn (in four volumes at £79.00) is really an essential investment for anyone who seriously wants to write Wimp programs.

We would also refer readers to the series of articles under the general heading of *Mastering the Wimp* published in RISC User from Volume 2 Issue 9 to Volume 4 Issue 4 (and available as back issues). This series of articles provides a more graduated introduction to the subject.

More recently we have started a new series on programming the Wimp in C. For information on ARM assembler there is *Archimedes Assembly Language* by Mike Ginns, published by Dabs Press at £14.95.

QUICK ON THE DRAW

In RISC User Volume 4 Issue 2, Martyn Fox shows how Draw can be used to produce the artwork for crossword puzzles. The letters themselves are entered individually locked to a 1/4" grid. Because this does not produce exact vertical alignment, the grid must be unlocked to adjust individual letters.

An alternative is to choose a mono-spaced font, such as Corpus, rather than a proportionally spaced font such as Homerton. Using Corpus, set the point size to 15pt; this will give precisely eight characters per inch, and four lines per inch. Enter the first word with one space between each letter. This will result in one letter per square. Continue throughout the grid, with no further mouse actions, until the entries are complete. If necessary make a final adjustment to the position of the grid relative to the letters as a whole; there is no need for individual adjustment of letters such as the 'I', since the mono-spaced font centralises them in the squares.

David Cawsey

As we have said before, Draw offers a powerful and flexible approach to so many tasks. The alternative approach for crosswords suggested by David Cawsey is well worth considering, but does of course limit the choice of font which can be used.

September 1991

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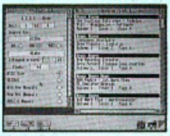

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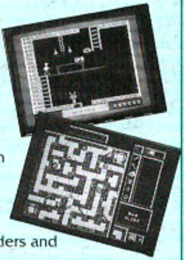

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by David Spencer and Mike Williams

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